Haier

Domestic Air Conditioner

SERVICE MANUAL

Models

HSU-22H03/R2(DB)

- Features

- Comfortable:wide -angle airflow
- health air purifying
- quiet operation
- energy efficient

Serial Number: Version:00.00 Edition: 2005-11-16

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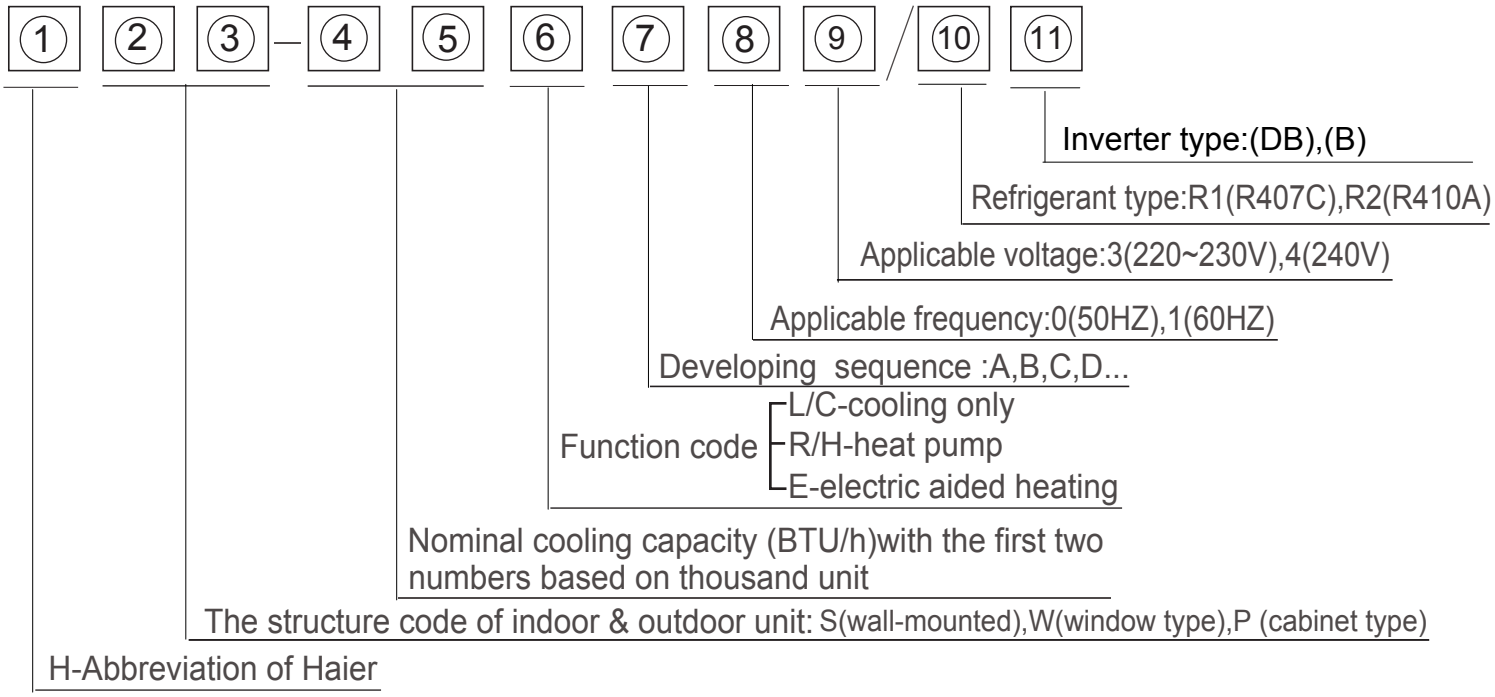
DESCRIPTION OF

PRODUCT MODEL CODING

& SERIES INTRODUCTION

Introductory Remarks

Description of coding rules of unit model
Coding rules and descriptions are as follows:


① ② ③ – ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩ ⑪
Inverter type:(DB),(B)
Refrigerant type:R1(R407C),R2(R410A)
Applicable voltage:3(220~230V),4(240V)
Applicable frequency:0(50HZ),1(60HZ)
Developing sequence :A,B,C,D...
Function code
L/C-cooling only
R/H-heat pump
E-electric aided heating
Nominal cooling capacity (BTU/h)with the first two numbers based on thousand unit
The structure code of indoor & outdoor unit: S(wall-mounted),W(window type),P (cabinet type)
H-Abbreviation of Haier

Examples:
HSU-22H03/R2(DB) represents wall-mounted split type heat pump DC inverter air conditioner. The cooling capacity is 22000BTU/h and the power supply is 230V/50Hz and "R2" means the refrigerant is R410A.

Standard Situation/Conditions

No.	Operating condition	indoor air status		outdoor air status	
		DB°C	WB°C	DB°C	WB°C
1	Norminal cooling	27°C	19°C	35°C	24°C
2	Norminal heating	20°C	Not control	7°C	6°C
3	Norminal electrical heating	---	---	---	---

C.Series brief introduction

1.comfortable:wide-angle airflow
The vertical dual-flap and horizontal wide-angle louvers ensure the cool (warm) air reaches every corner of the room.

2.Health air purifying
An air purifying filter with deodorizing and disinfecting functions keeps the air clean and users healthy.

3.Quiet operation
Fan With Random-pitched Blades.
Random-pitched blades help reduce operating noise while maintaining a high airflow rate.

4.Energy efficient
The design of inner-grooved copper tube greatly increases the refrigerant contact area and the efficiency of cooling/heating functions.

5.Convenience
Auto restart and washable panel:
The grille can be removed and washed easily when necessary. With Auto restart function the unit will automatically return to the operating settings in use before the power failure when power is restored.

6.Wide variety of functions
24-Hour Timer:
24-hour timer allows users to select the exact time they would like the air conditioner to turn on and to turn off. Timers on previous models operation are based on the number of hours of desired operation.

7.Night-set models
When the air conditioner is operating on the timer-off circuit.The preset room temperature gradually rises (going down in heating) before the unit stops as shown below. Users can sleep comfortably without sudden change in temperature.

8.Program”dry”
This function automatically reduces the level of humidity while maintaining the preset indoor temperature.

Specifications

Domestic Air Conditione Model: HSU-22H03/R2(DB)

Specifications

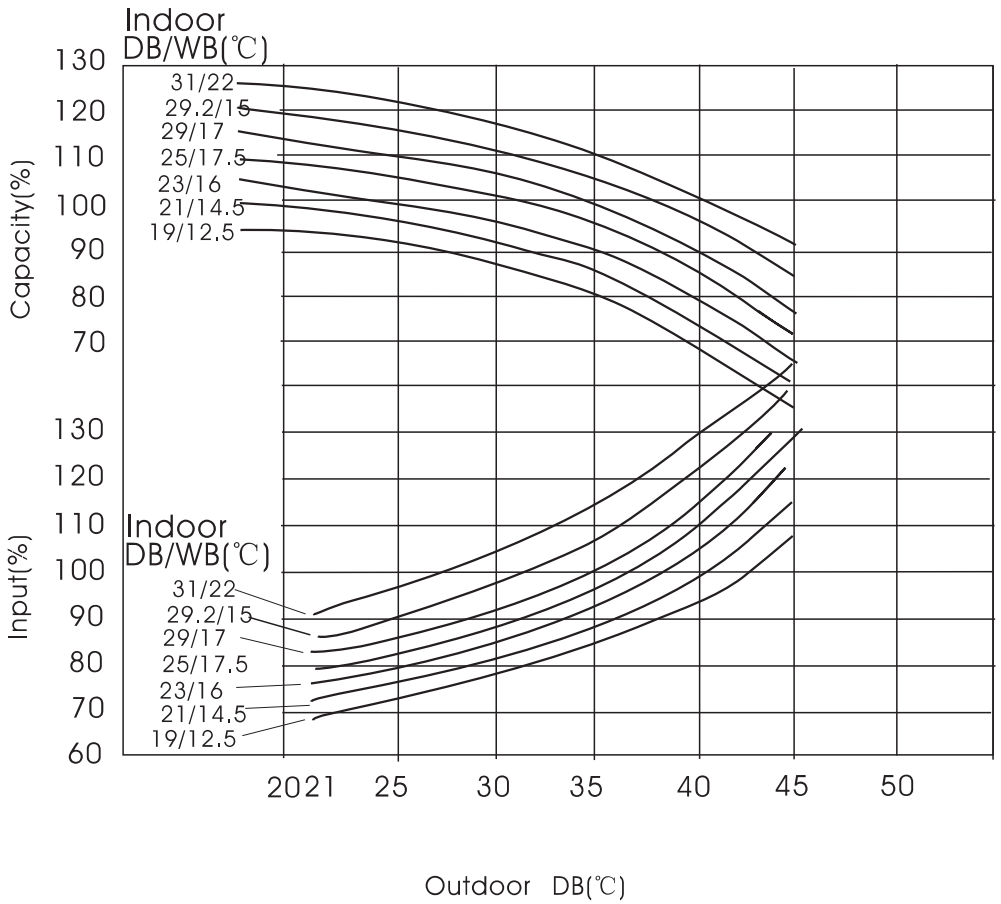
Model: HSU-22H03/R2(DB)

Cooling capacity(W)		6000(720-6300)W	Heating capacity(W)		6200W(1080-7750)W
Cooling coefficient (W/W)		3.03	Heating coefficient(W/W)		3.01
Cooling power input (W)		1980(310-2450)W	Heating power input(W)		2060W(430-2600)W
Moiture removal $(m/h)^3$		$2.3 X10^{-3}$	Frequency range(Hz)		50
Operating voltage range V( )		230	Refrigerant type		R410A
Operating temp.range ^{O}C( )		-7-43	Air sending angle		60^{O}
Variation of temp.adjust ^{O}C( )		+1	Fan type	indoor unit	Cross flow fan
				outdoor unit	Axial flow fan
Climate type:		T1	Class of electric shock		I
Indoor unit noise (cooling)		44/39/37	Outdoor unit noise (cooling)		56
Indoor unit noise (heating)		44/39/37	Outdoor unit noise (heating)		56
Net dimensions mm (indoor unit)		938×182×265	Net dimensions mm (outdoor unit)		810×288×680
Packaging dimensions mm (indoor unit)		990×260×315	Packaging dimensions mm (outdoor unit)		915×325×699
Net/gross weight (kg) (indoor unit)		11/14	Net/gross weight (kg) (outdoor unit)		45/53
Max. mounting height difference(m)		5	Piling layers	indoor unit	8
				outdoor unit	4
Refrigerant charge(g) (R410A)		1900	Current entering side (indoor/outdoor)		indoor
Frequency of filter cleaning		Once/2 weeks	Max. refrigerant charge (g)		15
Compressor model		C-6RVN93H0N	Compressor manufacturer		HUARUN
Compressor oil charge (cc)		350(poe)	Compressor protector type		Internal
Maxi. length of connecting pipe (m)		15	drain hose	length(mm)	2000
				diametre(mm)	16
Cap. tube type muffle model:		TP_2Y	Type of tube of evaporator and condenser		Internal thread
Fan speed(H/M/L)(r/min) (indoor unit)	cool	1350/1250/1150	Size of tube of evaporator and condenser(mm)		Ø 6.35 / Ø 12.7
	heat	1350/1250/1150			
Fan speed(r/min) (outdoor unit)		760	Appearance features of indoor unit		plastic
Cut-off vavle(inch)	two-way	1/4	Appearance features of outdoor unit		metal
	three-way	1/2			
Max. operating pressure at warm side(Mpa)		4.15	Max. operating pressure at cool side(Mpa)		4.15

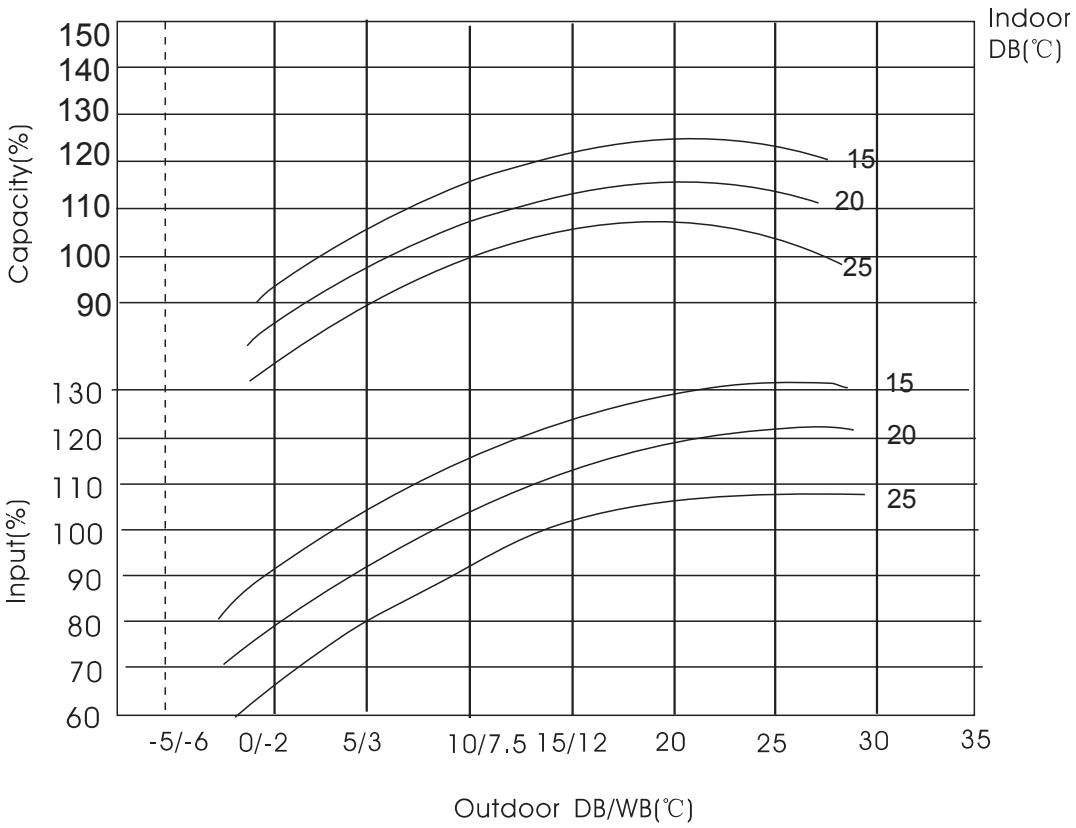
Curves of performance of compressor

Curves of cooling capacity and heating capacity as a function of outdoor temperature(-7°C~43°C)

Cooling

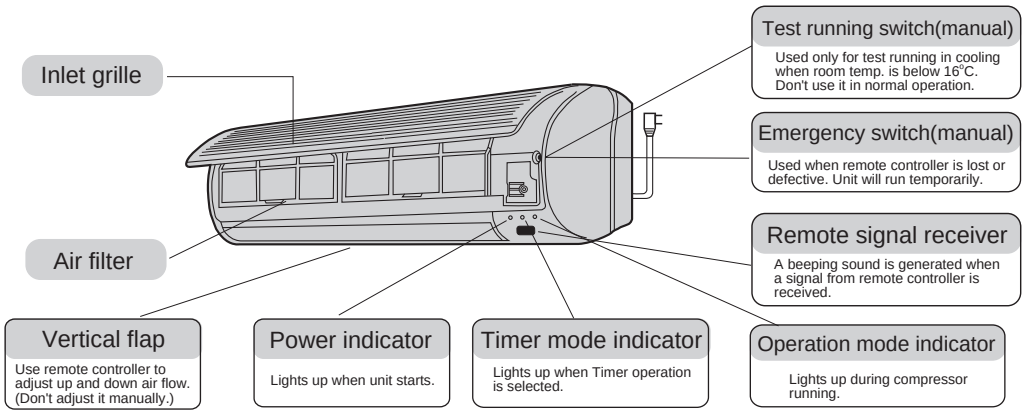


Heating



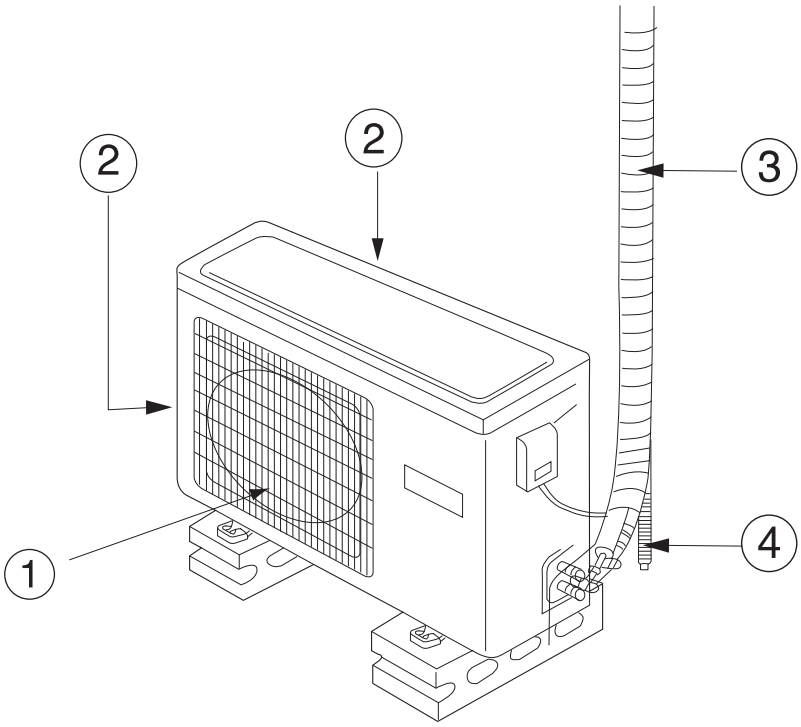
Description,dimensions and functions of main components and accessories

Indoor unit

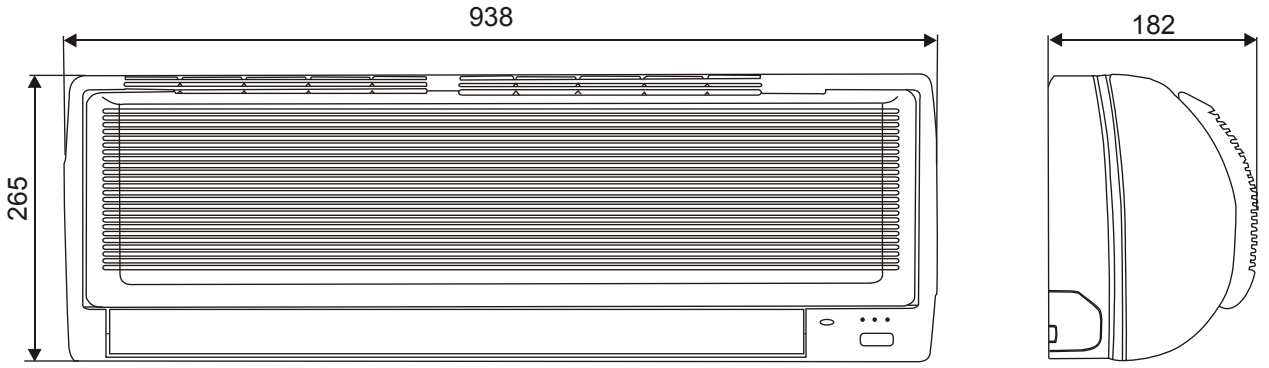

Inlet grille
Air filter
Test running switch(manual)
Used only for test running in cooling when room temp. is below 16°C. Don't use it in normal operation.
Emergency switch(manual)
Used when remote controller is lost or defective. Unit will run temporarily.
Remote signal receiver
A beeping sound is generated when a signal from remote controller is received.
Vertical flap
Use remote controller to adjust up and down air flow. (Don't adjust it manually.)
Power indicator
Lights up when unit starts.
Timer mode indicator
Lights up when Timer operation is selected.
Operation mode indicator
Lights up during compressor running.

For model: HSU-22H03/R2(DB)

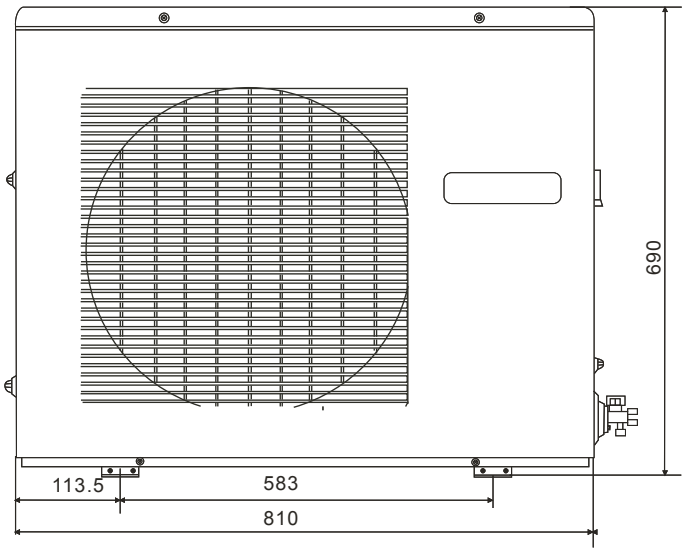
Outdoor unit



NET DIMENSIONS: Indoor unit for HSU-22H03/R2(DB)

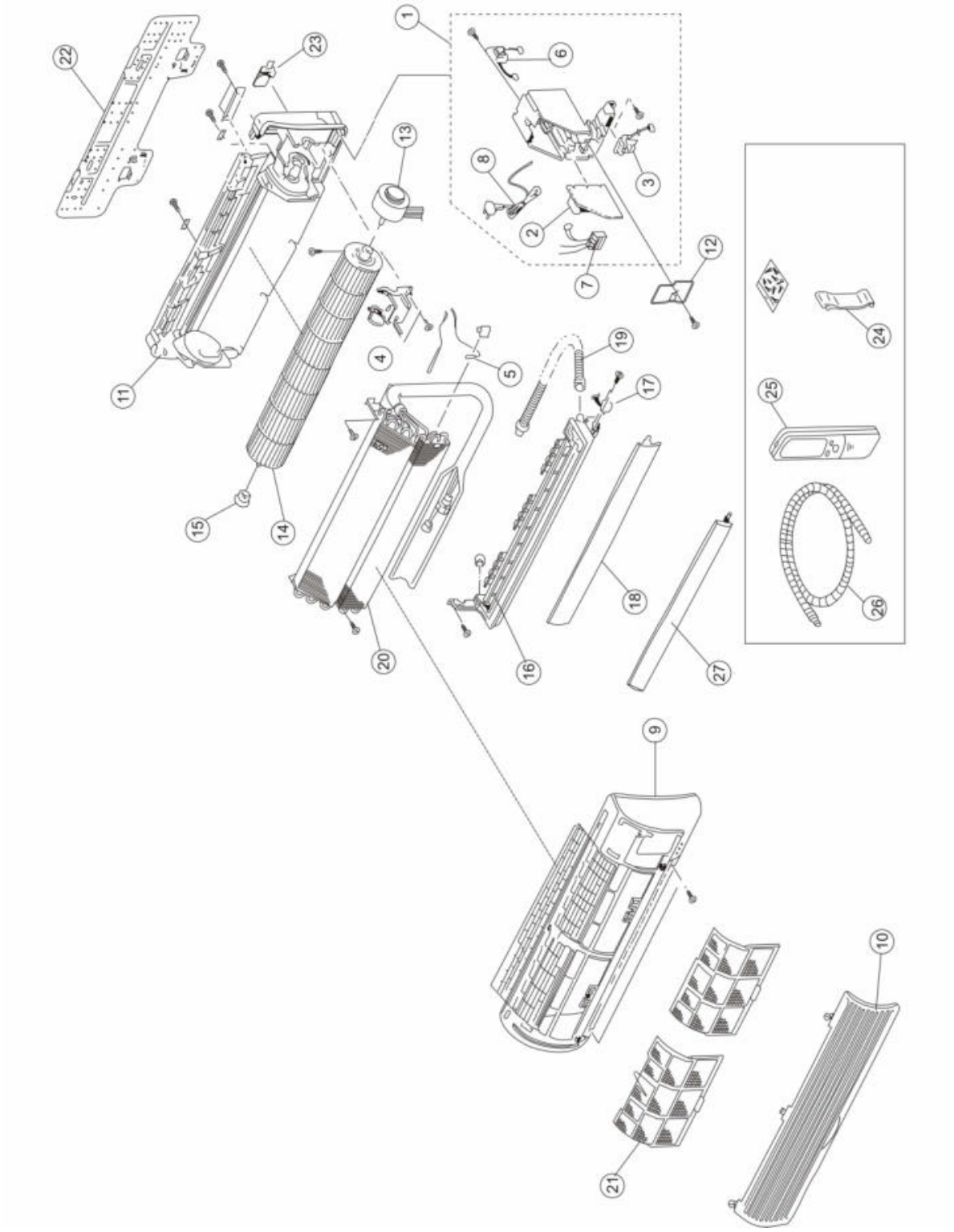


NET DIMENSIONS: outdoor unit for HSU-22H03/R2(DB)



Knock-down drawings and part lists

KNOCK-DOWN DRAWINGS FOR INDOORUNIT



No. in exploded view	Spare parts number	Spare parts description in english	Model	Qty.	Failure rate	The proportion of the spare part stock	remark
1	0010807073	Indoor elecrtic box	HSU-22H03/R2(DB)	1	0.0		X
2	0010403617	PCB	HSU-22H03/R2(DB)	1	0.1		
3	001A0600287	Riever	HSU-22H03/R2(DB)	1	0.2		*
4	001A1431717	Motor cover	HSU-22H03/R2(DB)	1	0.2		*
5	001A3900059	Coil cover	HSU-22H03/R2(DB)	1	0.0		X
6	0010400633	transformer	HSU-22H03/R2(DB)	1	0.1		
7	001A4000161	Terminal block	HSU-22H03/R2(DB)	1	0.2		*
8	----	Wires	HSU-22H03/R2(DB)	1	0.1		
9	001A1231134	Front panel	HSU-22H03/R2(DB)	1	0.2		*
10	001A1231135	Front grille	HSU-22H03/R2(DB)	1	0.1		
11	001A0100276	Frame assy.	HSU-22H03/R2(DB)	1	0.1		
12	001A1431494	Service cover	HSU-22H03/R2(DB)	1	0.1		
13	001A3000088	Motor cover	HSU-22H03/R2(DB)	1	0.1		
14	0010202227	Fan	HSU-22H03/R2(DB)	1	0.2		*
15	001A0300005	Bearing	HSU-22H03/R2(DB)	1	0.2		*
16	001A0900104	Drain horse	HSU-22H03/R2(DB)	1	0.2		*
17	001A3000008	Motor cover	HSU-22H03/R2(DB)	1	0.1		
18	001A1231139	Flap	HSU-22H03/R2(DB)	1	0.1		
19	001A0900011	Dain horse	HSU-22H03/R2(DB)	1	0.1		
20	0010707193	Heat exchanger	HSU-22H03/R2(DB)	1	0.1		
21	001A2400080	Air filter	HSU-22H03/R2(DB)	1	0.1		
22	0010101275	Mounting plate	HSU-22H03/R2(DB)	1	0.1		
23	001A1431368	Piping support	HSU-22H03/R2(DB)	1	0.1		
24	001A1431038	Piping clamp	HSU-22H03/R2(DB)	1	0.2		*
25	0010403894	Remote controller	HSU-22H03/R2(DB)	1	0.2		*
26	001A1434039	Drain horse	HSU-22H03/R2(DB)	1	0.1		
27	001A1231140	Flap	HSU-22H03/R2(DB)	1	0.1		

1,The failer rate and the proportion of the spare-part stock are regarded as the reference of the stock for spare-parts;The first time should be stocked accroded with the proportion of the spare-parts,and it should be adjusted with the actual quantity 3 months later.

2,easy-damaged;The spare-part which is often damaged and the customer must stock in the spare-parts warehouse,and should be marked with"*"

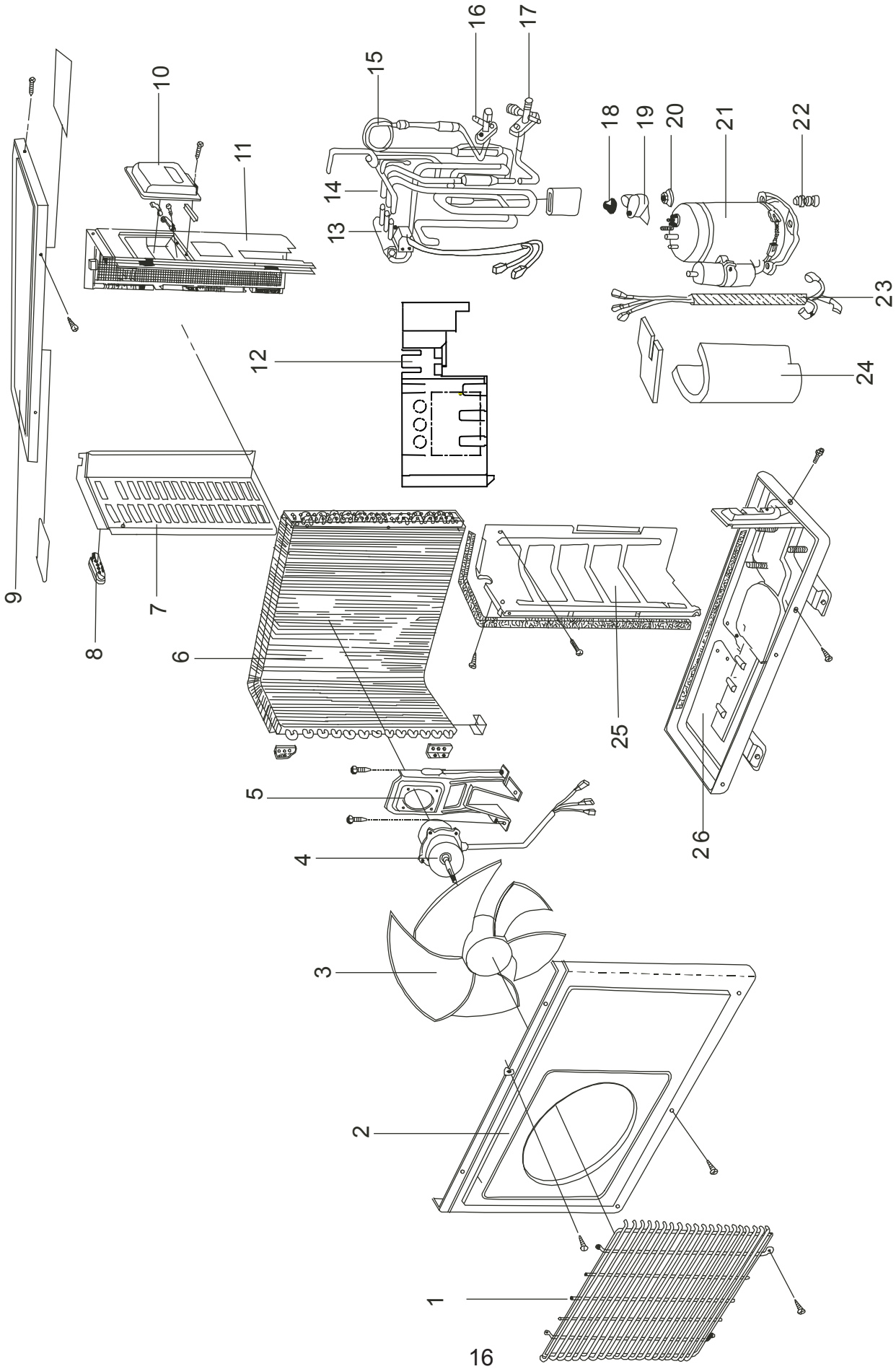
3,possible damaged:The spare-part which is not often damaged like the easy damaged one and the customer may stock in the spare-part warehouse accord with the actual case,should be marked with " ".

4,not need provided :The spare-part which is seldom damaged or the maintenance man could not maitmains.The spare parts may be air freighted by the factory if they were damaged.The customer nees not stock in the spare-part warehouse,should be marked with " x ".

5,Above should be improved accord with the reply of the market half a year per time.

6.The spare parts price on net is FOB Qingdao term.

KNOCK-DOWM DRAWINGS FOR OUTDOOR UNIT



No. in exploded view	Spare parts number	Spare parts description in english	Model	Qty	Failure rate(%)	The proportion of the spare part stock	Remark
1	001A1303126A	Front grille	HSU-22H03/R2(DB)	1			outdoor
2	001A1101038	Front panel	HSU-22H03/R2(DB)	1			outdoor
3	001A2331024	Axial fan	HSU-22H03/R2(DB)	1			outdoor
4	0010403895	Motor	HSU-22H03/R2(DB)	1			outdoor
5	001A1301133	Bracket for fan motor	HSU-22H03/R2(DB)	1			outdoor
6	0010705512	Condenser	HSU-22H03/R2(DB)	1			outdoor
7	001A0100356	Side panel(left)	HSU-22H03/R2(DB)	1			outdoor
8	001A1436182	Handle	HSU-22H03/R2(DB)	1			outdoor
9	001A0100124	Panel(top)	HSU-22H03/R2(DB)	1			outdoor
10	001A0100125	Service cover	HSU-22H03/R2(DB)	1			outdoor
11	001A0100997	Side panel(fight)	HSU-22H03/R2(DB)	1			outdoor
12	0010806797	Electric box assy.	HSU-22H03/R2(DB)	1			outdoor
13	0010703520	4-wan valve coil	HSU-22H03/R2(DB)	1			outdoor
14	---	Tube assy	HSU-22H03/R2(DB)	1			outdoor
14-1	0010706999	Discharging tube assy.	HSU-22H03/R2(DB)	1			outdoor
14-2	0010707000	Suction tube	HSU-22H03/R2(DB)	1			outdoor
14-3	0010707001	Suction tube assy.	HSU-22H03/R2(DB)	1			outdoor
14-4	0010707002	Discharging tube assy.	HSU-22H03/R2(DB)	1			outdoor
15	0010706999	Capillary assy.	HSU-22H03/R2(DB)	1			outdoor
16	0010705987	Service valve	HSU-22H03/R2(DB)	1			outdoor
17	0010705989	Service valve	HSU-22H03/R2(DB)	1			outdoor
18	---	Nut	HSU-22H03/R2(DB)	1			outdoor
19	---	Service cover	HSU-22H03/R2(DB)	1			outdoor
20	---	Nut	HSU-22H03/R2(DB)	1			outdoor
21	0010707200	Compressor	HSU-22H03/R2(DB)	1			outdoor
22	---	Rubber cushion	HSU-22H03/R2(DB)	1			outdoor
23	---	Wire group	HSU-22H03/R2(DB)	1			outdoor
24	001A17621543	Pad	HSU-22H03/R2(DB)	1			outdoor
25	0010806754	Bottom plate assy.	HSU-22H03/R2(DB)	1			outdoor
26	0010800009	Separating plate	HSU-22H03/R2(DB)	1			outdoor

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6.The spare parts price on net is FOB Qingdao term.

Brief introduction to electrical control functions

One. Basic Control

1. Function Display

Lights up when unit starts.Lights up when Timer operation is selectedn；

2. Temperature Adjustment Function

In temperature adjustment function, operation frequency of outdoor unit is determined based on indoor temperature and set temperature.

During wind speed adjustment, indoor fan PI（D）is controlled as per the needs of temperature adjustment.

3. Compressor Off

Compressor is off when indoor temperature is 1° above set temperature (heating mode) / 1° below set temperature (cooling mode).

4. Compressor On

Compressor is on when indoor temperature is -0.67° below set temperature (heating mode)/ 0.67° above set temperature (cooling mode).

5. Remote Control Operation

In remote control, if temperature changes, PI operation will start in 2s.

If change of set temperature is towards compressor off, compressor will shut down when it falls into compressor-off temperature range.

6. Indoor Fan Rotate Speed

Mode	Wind Speed	Rotate Speed（rpm）
Heating	Weak	650
	Low	950
	Middle	1050
	High	1150
	Super High	--
Cooling	Weak	650
	Low	950
	Middle	1050
	High	1150
	Super High	--
Ventilation	Low	950
	Middle	1050
	High	1150
Rated	Cooling	1350
	Heating	1350

Two. Operation Mode:

1. Half-automatic Operation Mode

Half-automatic function is based on original automatic function.

a. Cooling & Heating Model Unit

When system is on and operation mode switches to automatic, the system will determine operation mode based on the difference of current set temperature and room temperature and will start operation as per mode determined. In the following selective conditions, Tr represents room temperature and Ts represents set temperature.

Upon initial entry into automatic mode, operation mode is selected as per the following conditions:

Tr≥Ts-3°C Cooling mode is selected

Tr＜Ts-3°C Heating mode is selected

When entering automatic mode, the system can switch between cooling and heating mode corresponding to change of room temperature: If the unit is currently in cooling mode, compressor will shut down when temperature falls into compressor off temperature range. 15 minutes after compressor is off, compressor will perform temperature check, at which time if Tr＜Ts-3°C the system will enter heating mode otherwise it will remain in cooling mode. If the unit is currently in heating mode, compressor will shut down when temperature rises into compressor off temperature range. 15 minutes after compressor is off, compressor will perform temperature check, at which time if Tr＞Ts+3°C the system will enter cooling mode otherwise it will remain in heating mode.

2.Cooling Mode:

*Temperature Control Range:16°C---30°C

*Temperature Difference: ±1°C

*In the first 2 minutes after compressor starts, it is not under the control of temperature sensor.

*Control Feature: When Tr（air intake）>Ts（set）°C,compressor external air fan is on, indoor fan operates at set speed.

When Tr（air intake）＜Ts（set）,compressor external air fan is off, indoor fan operates at set speed.

When Tr= Ts, the system will remain its original state.

*Wind Speed Control:（temperature difference 1°C）

Automatic: When Tr>=Ts+3°C, high wind；

When Ts+1°C≤Tr Ts+3°C, middle wind；

When Tr<Ts+1°C, low wind

Temperature sensor is off and air fan is in low wind speed

Manual: High, middle, low and automatic wind may be set as needed when unit is on. (The unit will act 5s after receiving remote control signal.)

*Compressor Control: Compressor is not under the control of temperature sensor in the first 2 minutes after it starts and compressor can only restart at least 3 minutes after it shuts down. There is no 3-minute protection at initial energization. (There are power cutoff compensation and 3-minute protection features).

* In case change of set temperature by remote control meets the condition of unit shut down or unit is powered off manually, the operation is not restricted by the 2-minute non-response feature and the unit will shut down immediately.

3.Dehumidification Mode:

*Temperature Control Range:16---30°C *Temperature Difference :±1°C

*Control Feature: When Tr >Ts +2°C, compressor operates at normal state and indoor fan operates at set speed.

- When Tr is between Ts+2°C and Ts, compressor operates at low frequency and fan is in weak wind mode.
- Tr <Ts, compressor and external fan will shut down, and indoor fan will stop for 3 minutes and then enters weak wind mode.
- There is ±1°C set temperature difference in each mode.

*Wind Speed Control:

Automatic When Tr >=Ts +5°C, high wind；
When Ts +3°C≤Tr <Ts+5°C, middle wind；
When Ts+2°C≤Tr <Ts+3°C, low wind;
When Ts≤Tr<Ts+2°C, intermittent operation at weak wind;
Tr <Ts, fan will standby for 3 minutes and indoor fan is off
(except oxygen or fresh air feature is set)
Tr<Ts, fan will standby for 3 minutes and enter weak wind mode.

*Compressor Control: Compressor is not under the control of temperature sensor in the first 2 minutes after compressor starts and compressor can only restart at least 3 minutes after it shuts down. There is no 3-minute protection at initial energization. (There is 3-minute protection if the unit has power outage compensation feature.

* In case change of set temperature by remote control meets the condition of unit shut down or unit is powered off manually, the operation is not restricted by the 2-minute non-response feature and will shut down immediately.

4.Heating Mode:

*Temperature Control Range:16---30°C *Temperature Difference :±1°C

*Control Feature: When for the first time Tr≤Ts, compressor, four-way valve and external fan are turned on and indoor fan operates at anti cold wind mode. +4° temperature compensation will automatically be added on entering heating mode.

When Tr >Ts+5, external fan of compressor is off and indoor fan will operate in residual heat blow mode.

When Tr<Ts+5, compressor, four-way valve and external fan are turned on and indoor fan operates at anti cold wind mode.

*Indoor Fan Control:

Manual Control: High, middle, low and automatic wind may be set as needed

Automatic Control: when Tr >Ts, high wind, when Ts>=Tr> Ts+2°C, middle wind, when Tr> Ts+2°C, low wind.

There is no delay when wind speed rise from low to high speed while there is a 3-minute delay when wind speed fall from high to low speed (Fan will operates in high wind for 3 minutes). The unit can restart at least 3 minutes after shut down. There is no 3-minute protection at initial energization. (There is 3-minute protection if the unit has power outage compensation feature.

*Compressor Control: Compressor Control: Compressor is not under the control of temperature sensor in the first 2 minutes after compressor starts and compressor can only restart at least 3 minutes after it shuts down. There is no 3-minute protection at initial energization. (There is 3-minute protection if the unit has power outage compensation

feature.

*In case change of set temperature by remote control meets the condition of unit shut down or unit is powered off manually, the operation is not restricted by the 2-minute non-response feature and will shut down immediately.

*Anti Current Surge: External fan starts 2s after compressor is on. *Timed Power On & Off Feature *Sleep Control Feature

*Four-way Valve Control: Four-way valve is on 10s prior to compressor startup and off 2 minutes and 30 seconds after compressor shutdown.

*Anti Cold Wind Operation:

（1）Compressor operation or compressor operation after defrosting. When indoor heat exchanger temperature is below 23°C, indoor fan is off; when indoor heat exchanger temperature is above 23°C, fan operates in weak wind mode.

（2）If, after 4 minutes, coil temperature can not exceed 38°C, fan will operate at set speed.

（3）If coil temperature exceed 38°C, fan will operate at set speed.

（4）If coil temperature falls below 38°C when compressor is running, fan will still operate at set speed.

*Residual Heat Blow: Temperature sensor is off: If coil temperature is above 23°C, fan will enter weak wind mode, if coil temperature below 23°C, indoor fan will stop.

Remote Control Shut Down: Deflector will close after set wind blows for 1 minute.

*Automatic Temperature Compensation in Heating Mode

1 Condition: Compressor shutdown time is less than 5 minutes

2. Operation Rule:

1）Ts =Trc+5°C+（Trc -Tt [The instant when compressor starts up] ）

2）Trc-Tt[The instant when compressor starts up] ≤2°C

Note: The above two conditions are not applicable to initial start-up.

3）Press “–”temperature key on remote control, and resume Ts =Trc+5°C operation; Press “+”temperature key on remote control, it will operate based on automatic compensation set value.

4）If Trc -Tt[before compressor is on] ≤0°C, it will operate as per Ts=Trc+5.

3. If ventilation door is in healthy up-flow position, set temperature in heating mode will be increased by 2°Con its original basis.

5.Defrosting Mode

Air fan will engage in anti cold wind operation based on the data sent by heat exchanger temperature sensor. Sensor fault will not be checked within the first 2 minutes after exiting defrosting mode.

6. Negative Ion Health Feature Control

When receiving remote control signal, if fan is operating, negative ion generator will start working to discharge negative ion.

If air fan is off, negative ion generator will be off.

When negative ion generator is off, if health feature is set, then negative ion generator will turn on when fan start operation again.

7. Timed Operation

Time count starts based on time difference between timing clock and current clock.

Time off may be set and operation will stop when unit receives time off signal.

Timed on may be set and operation will start when unit receives time on signal.

Timed on/off may be set, which will be performed as per set sequence.

8. Sleep Operation

8－1.In cooling/dehumidification mode, set temperature will rise by 1℃ after one hour of operation and it will rise another 1℃ after another hour. The unit will shut down after operation for another 6 hours.

8－2.In heating mode, set temperature will fall 2℃ after one hour and it will fall another 2℃ for another hour and it will rise 1℃ after another 3 hours and the unit will shut down operation after another 3 hours.

8－3 If wind speed of indoor fan is high before setting sleep mode, then it will switch to middle wind after sleep mode is set. If wind speed of indoor fan is middle before setting, it will switch to low level after setting. If wind speed of indoor fan is low before setting, then it will remain unchanged after setting.

9.Trial Operation

Wind speed is high and trial operation will end in 30 mins, and unit will shut down. In trial operation, the unit will exit trial operation mode when receives remote control signal and low load protection will not be activated.

10.EEPROM Control

When outdoor unit is supplied with power, if EEPORM parameter is inconsistent with checksum, EEPROM faults.

When indoor unit receives EEPROM fault signal from outdoor unit, it will display outdoor unit EEPROM fault.

At this time, control and emergency operation are not accepted and the fault can only be relieved by power off.

Three. Special Function

1.Power-off Compensation

a Entry Condition: Press sleep key 10 times in 7s and buzzer sounds 4 times and the current status is saved into indoor unit EEPROM upon the entry.

b. On entering power-off compensation operation, indoor unit operates as per the following procedures:

The unit operates as per condition set by remote control and emergency setting and current status is saved into indoor unit EEPROM.

c. Exit Condition: Press sleep key 10 times in 7s and buzzer sounds 2 times

2. Rated Operation

① Rated Cooling

a. Entry Condition: The unit will enter rated cooling upon receipt of remote control signal.

b. Indoor unit will operate as per the following procedures when entering remote control cooling mode:

Air fan will enter manual high wind (or rated wind) operation, panel will display cooling and rated data signal is in communication.

c. Exit Conditions: The unit will exit rated operation when receiving remote control or press-key signal and it will enter the mode set by remote control and press key.

② Rated Heating

a Entry Condition: The unit will enter rated heating upon receipt of remote control signal.

b Indoor unit will operate as per the following procedures when entering rated heating mode:

Air fan will enter manual high wind (or rated wind) operation, panel will display heating and rated data signal is in communication.

c Exit Conditions: The unit will exit rated operation when receiving remote control or press-key signal and it will enter the mode set by remote control and press key.

3. Emergency Switch:

When unit is in shutdown condition, press emergency switch down for less than 5s, the unit will start emergency operation.

When unit is in shutdown condition, press emergency switch down for more than 5s but less than 10s, the unit will start trial operation.

When shutdown, press emergency switch down for more than 10s but less than 15s, it will display the previous fault.

When unit is in shutdown condition, press emergency switch down, the panel will display automatic operation.

When fault occurs, press emergency switch and the unit will shut down and fault is cleared.

During fault display, press emergency switch will end fault display mode.

One. System Major Function

Sensor Code Definition: Tai= Indoor Ambient Temperature, Tao=Outdoor Ambient Temperature, Tc1=Indoor Coil, Td= Air Discharge, Te= Outdoor Coil, Ts=Air Intake

1.1: Outdoor Unit Operation Frequency and Control

1.1.1: Compressor Operation Frequency Control

- Compressor Operation Frequency Range:

Outdoor Temperature	~0℃		0℃~	
Heating	17RPM	110RPM	17RPM	120RPM
Cooling	20RPM	110RPM	20RPM	120RPM
Defrosting	88rpm			

1.1.2: Compressor Startup

Regardless of target frequency of indoor unit, each time when compressor is from off to on, it must maintain 60Hz and 90Hz for one minute respectively (Frequency will be immediately decreased under the condition that outdoor unit air discharge temperature overheating protection is activated or overcurrent of compressor) then the compressor will operate towards target frequency. This process does not exist in normal operation of unit.

1.1.3:Heating:

- When completing compressor startup operation, it will operate as per frequency of indoor unit.
- After 2 minutes, compressor operation frequency will be compensated as per relevant conditions.

1.1.4 Cooling & Dehumidification:

- When completing compressor startup operation, it will operate as per frequency of indoor unit.
- After 2 minutes, compressor operation frequency will be compensated as per relevant conditions.

1.1.5: Compressor Frequency Increase/Decrease Speed

Rapid Frequency Increase/Decrease Speed 1 ----------1HZ/s

Slow Frequency Increase/Decrease Speed 2 ----------1HZ/10s

1.2: Outdoor Fan Control

1.2.1: Wind speed control when AC fan is adopted for outdoor unit.

- Whether to use AC fan or DC fan is determined by EEPROM
- Residual Heat Blow: After compressor shuts down in cooling mode, fan will run for 30s at low speed before stop.
- Wind Speed Adjustment Table (when compressor starts up for 3 minutes)

Ambient Temperature	~10	10~25	25~
Cooling & Dehumidification	Low Wind	Low Wind	High Wind
Heating	High Wind	Low Wind	Low Wind

- Wind Speed Adjustment Table

(based on ambient temperature and compressor frequency after compressor runs for 3 minutes)

Cooling Compressor Frequency		F<25Hz	25Hz<=F<45Hz	45Hz<=F
Tao	Above 28℃	Low Wind	High Wind	High Wind
	Below 28℃	Low Wind	Low Wind	High Wind

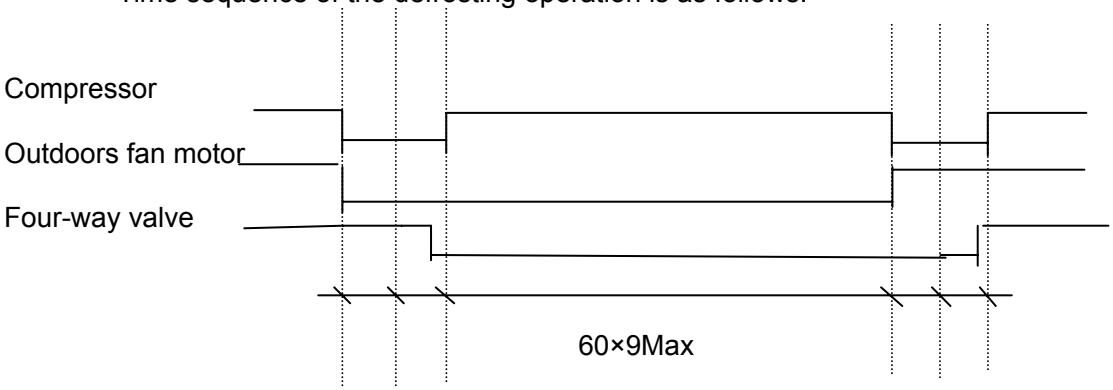
Heating Compressor Frequency	F<25Hz	25Hz≤F<45Hz	45Hz≤f

Tao	Above 15°C	Low Wind	Low Wind	High Wind
	Below 15°C	Low Wind	High Wind	High Wind

1.3: Four-way Valve Control

- Defrosting Four-way Valve Control，(please see defrosting process for details)

Time sequence of the defrosting operation is as follows:



- Four-way Valve Work Status in Other Modes:

In heating mode, four-way valve is on. If compressor is off or is switched to non-heating mode, four-way valve ensures that it is off at least 2 minutes after compressor shuts down.

1.5 Outdoor Defrosting Control

A. Defrosting Mode Entry Conditions

The unit will enter defrosting mode when compressor starts up and operates for 10 minutes continuously in heating mode and accumulated running time exceeds 45 minutes (Upon completion of defrosting or when switched to cooling mode, compressor accumulated operation time will be cleared) and when 2 minutes' continuous checking by defrosting sensor TE (check frosting condition of outdoor unit heat exchanger) and outdoor ambient temperature sensor TA meets the following conditions:

$$TE \le C \times TA - \alpha$$

Among which :C:TA＜0°C，C=0.8

TA≥0°C，C=0.6

For area prone to frost, the value is set at 6 when unit leaves the factory.

Defrosting entry temperature control $-15°C \le C \times TA - \alpha \le -5°C$

B. Defrosting Time Interval

- When data calculated by C×TA－αfalls into the range of $-15°C \le C \times TA - \alpha$, time interval between two defrosting cycles is 45 minutes.
- When data calculated by C×TA－αfalls into the range of $C \times TA - \alpha < -15°C$, time interval between two defrosting cycles is 65 minutes.
- C. Defrosting Operation
  - When defrosting begins, compressor will stop for one minute, external fan is running and 50s later, four-way valve will be off.
  - When compressor starts, external fan will be off, compressor will run at 60HZ for 60s then move on to target frequency of 88HZ.
  - During defrosting, compressor current and air discharge overheat protection features are effective. During defrosting, if compressor shuts down due to activation of protection feature or due to malfunction, it will resume after 3 minutes. In the unit is still within defrosting cycle, it will resume defrosting and startup of compressor will be based on the rule for defrosting startup. (The unit will exit defrosting mode and handle fault in the event of 3 consecutive restart failures.)
  - On entering defrosting, it must guarantee that compressor will operate for a minimum of 2 minutes in defrosting mode before exit.

D. Defrosting Exit Condition

When one of the following conditions is met, defrosting operation will be switched to heating operation.

（1）:Temperature of outdoor heat exchanger exceeds 7°C for 80s continuously

（2）:Temperature of outdoor heat exchanger exceeds 12°C for 5s continuously

（3）:Defrosting operation continues for 9 minutes.

E. When defrosting exit conditions are met, the unit will operate as follows

Compressor stops and external fan starts, 50s later, four-way valve will be on, 60s later, compressor will operate as per startup process.

1.6:PTC Output Control

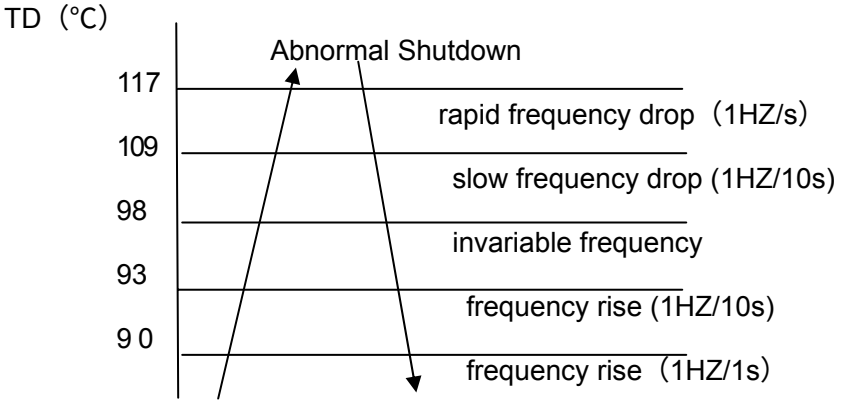
- When outdoor unit is energized, PTC output value is 0, 10s later, output value is 1.
- When compressor stops for 10 minutes continuously, PTC output value is 0.
- On receiving compressor startup instruction, initial PTC output is 1, and compressor startup will be performed 5s later.

Two. System Protection Function

2.1:Time interval between compressor shutdown and restart is set at 3 minutes to ensure that compressor will only restart after 3-minute shutdown and initial energization valves are turned on to adequate opening position after being fully turned off.

2.2:TD High Temperature Protection

As long as unit is on, the TD air discharge overheat protection feature will be activated, yet air discharge sensor fault must be alarmed 4 minutes after compressor starts.

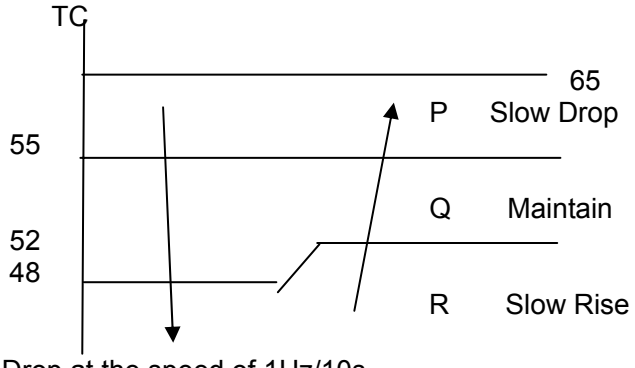


When TD>117°C for 20s continuously，air discharge overheat protection will be activated and fault will be reported to indoor unit.

In other protection features, there is no continuous allowance.

2.3: Indoor unit TC high temperature prevention and control in heating mode:

Indoor heat exchanger sensor will check temperature of indoor heat exchanger, if the temperature is higher than 55°C,compressor rotate speed will be reduced to activate indoor heat exchanger high temperature protection. When temperature of indoor heat exchanger falls below 48°C, normal control will be resumed.



P: Drop at the speed of 1Hz/10s

Q: Maintain the previous instruction cycle.

R: Rise at the speed of 1Hz/10s

If TC>=65℃，and continues for 5s，the unit will shutdown, outdoor fault indicator lamp will blink and fault will not be reported to indoor unit.。

When compressor shutdown exceeds 3 minutes, and TC<48℃，compressor will restart.

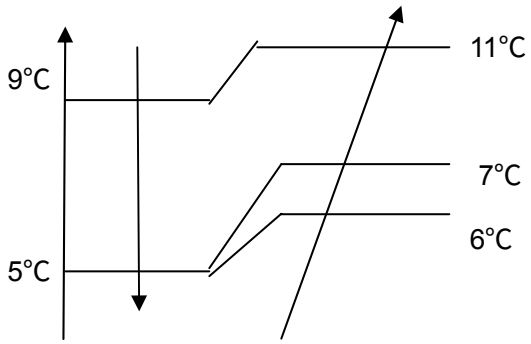
2.4.Overcurrent Prevention and Control

- During startup of compressor, if current is larger than 13A (The value is represented by A.) for 3s, compressor will shutdown and alarm, After 3 minutes, compressor will restart. In the event restart occurs 3 times in 10 minutes, compressor will stop and alarm to determine the fault. Compressor can only continue operation when power is cut off.
- Overcurrent Frequency Drop Protection

  When current is larger than 12 A，compressor frequency will drop at a speed of1HZ/s. When current is lower than 12A and higher than11A, frequency drop will stop and frequency will be increased at a speed of 1HZ/10s. When current is lower than 9A，target operation frequency will be resumed.

2.5. Indoor Heat Exchanger Anti-freeze Protection

- Anti-freeze during cooling



When T_C 〈 5℃，compressor frequency will drop at a speed of 1HZ/10s

When T_C starts to rise，and 6 〈=T_C 〈=7℃，compressor frequency will remain unchanged.

When 7 〈T_C 〈11℃, frequency will rise at a speed of 1HZ/10s.

If TC<=0℃，for 2 consecutive minutes, compressor will shutdown and outdoor fault lamp blinks. Fault will not be reported to indoor unit.

When compressor shuts down for more than 3 minutes，and when TC>7℃，compressor will restart.

2.6.Outdoor Temperature Limit

Cooling: When outdoor temperature is lower than 15℃, cooling operation will start, compressor frequency is limited to less than 50 HZ, outdoor wind speed is forced at level 1.

Heating: When outdoor temperature is higher than 20℃, heating operation will start, compressor frequency is limited to less than 50 HZ, outdoor wind speed is forced at level 1.

2.7 Rated Operation

Rated Cooling:

When receiving the instruction of indoor unit rated operation, the unit will start rated cooling operation.

Rated Heating:

When receiving the instruction of indoor unit rated operation, the unit will start rated heating operation.

2.8: Special Features

1,Power Operation: When receiving indoor power signal, the unit will operate as per frequency set by EEPROM, fan rotate speed is determined by ambient temperature and frequency. Power operation will stop when indoor power signal is cancelled.

2,Silence Operation: When receiving indoor silence signal, the unit will operate as per frequency set by EEPROM, fan rotate speed is determined by ambient temperature and frequency. Power operation will stop when indoor silence signal is cancelled.

3. Forced Cooling: When receiving indoor forced cooling signal, cooling operation will start in a frequency signaled by indoor unit. Only air discharge temperature and overcurrent protection features are effective and other protection features are invalid.

4. Rated, Middle and Minimum Capacity Operation: When receiving indoor, rated, middle and minimum capacity operation signal, outdoor unit will operate as per wind speed and frequency set by EEPROM and all the protection features are effective.

Three. Fault Display and Treatment

- In case outdoor unit faults, the alarm indicator lamp will blink and blink frequency is 1HZ，Time interval between blink cycles is 3s.
- Alarm indicator lamp is off when there is no fault.
- Three are three ways of fault alarm.
  It is ensured that fault alarm indicator lamp will blink for more than 2 minutes and 30s each time.

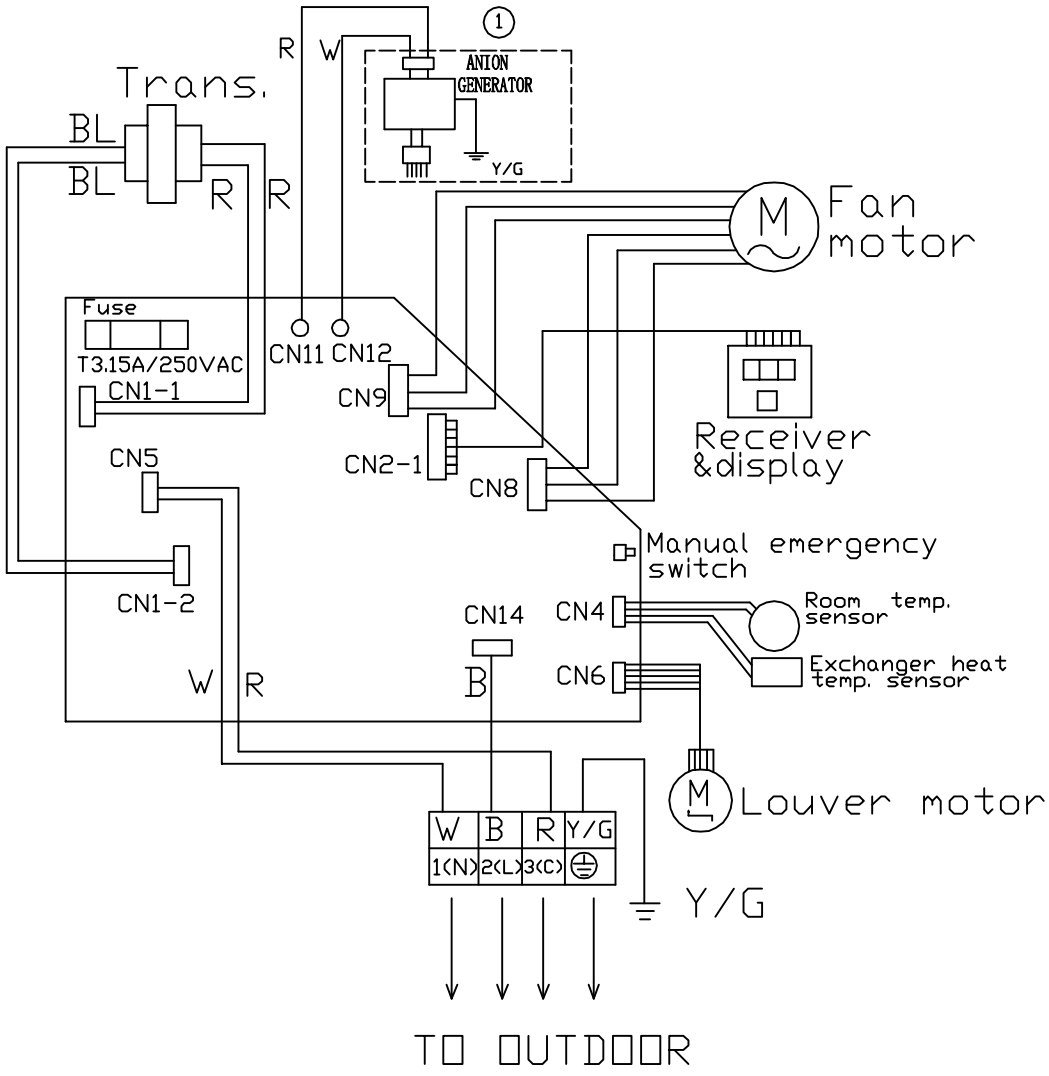
（1）: Resumable Alarm, fault code is sent to indoor unit.

（2）: Resumable Alarm，if there are 3 consecutive non-resumable fault codes in 10 minutes, it need to restart by cut off the power.

Wiring diagram

0010557242

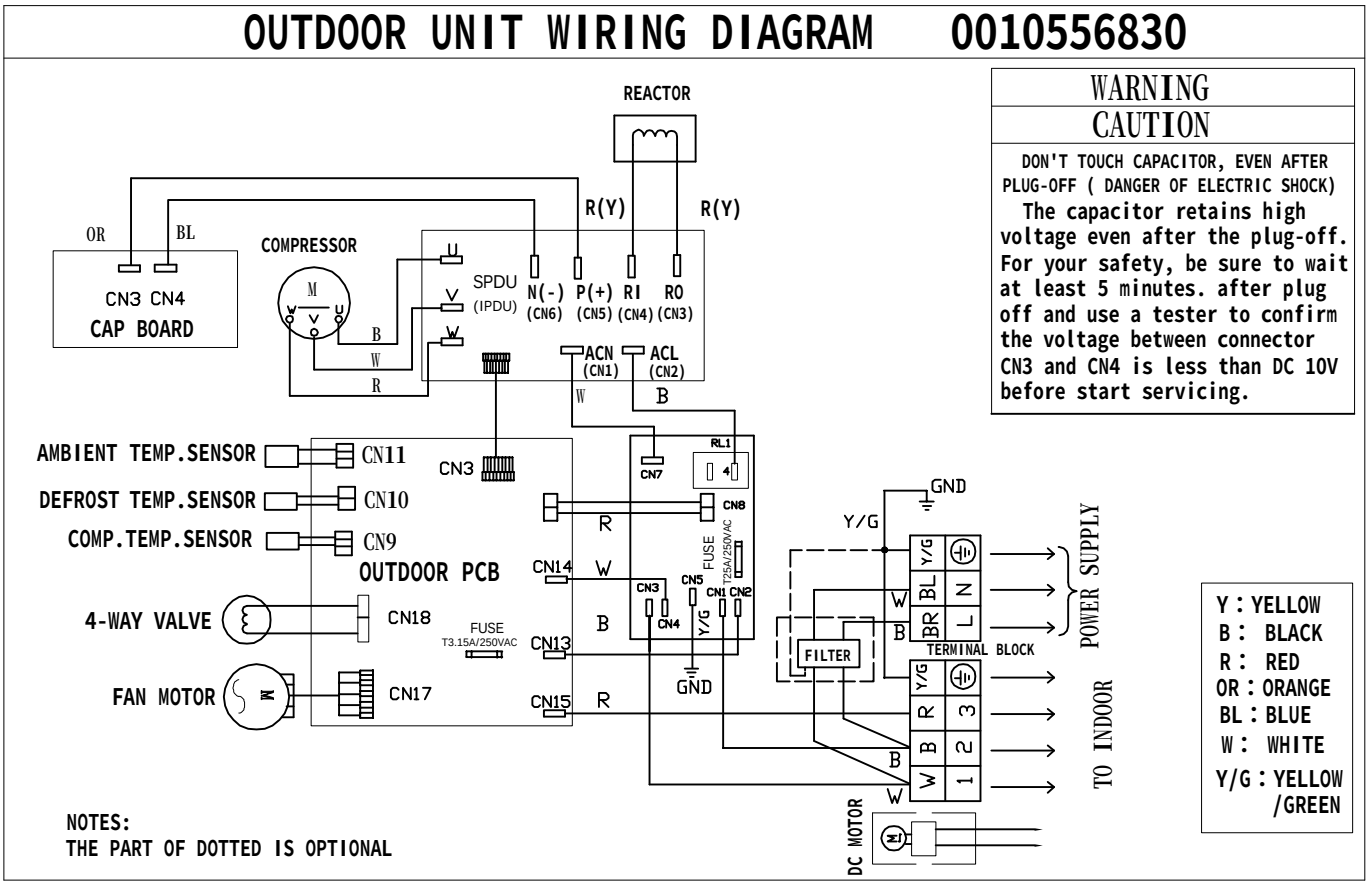
WIRING DIAGRAM



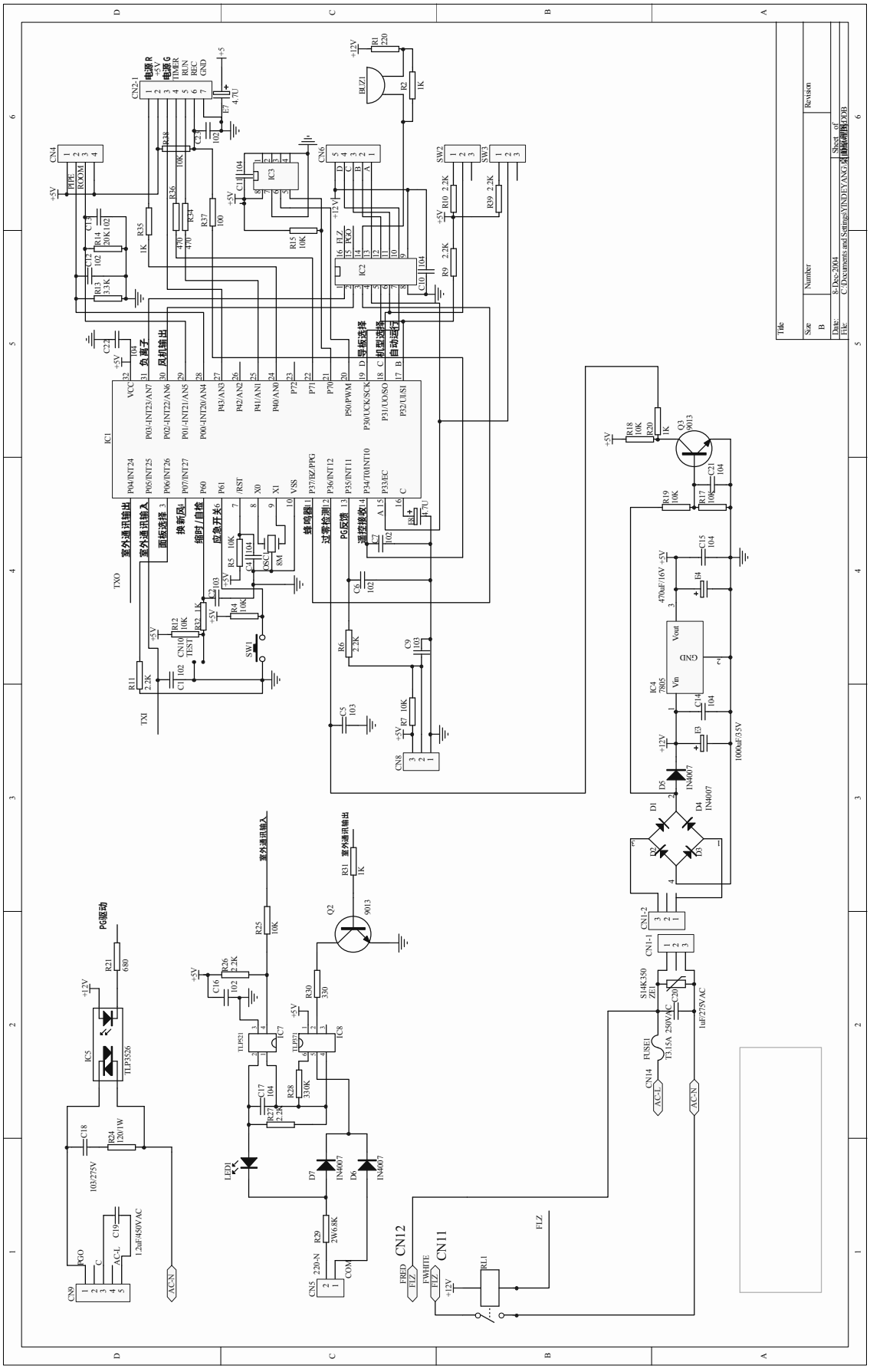
THE UNIT WITHOUT THE HEALTH FUNCTION HAS NO ①

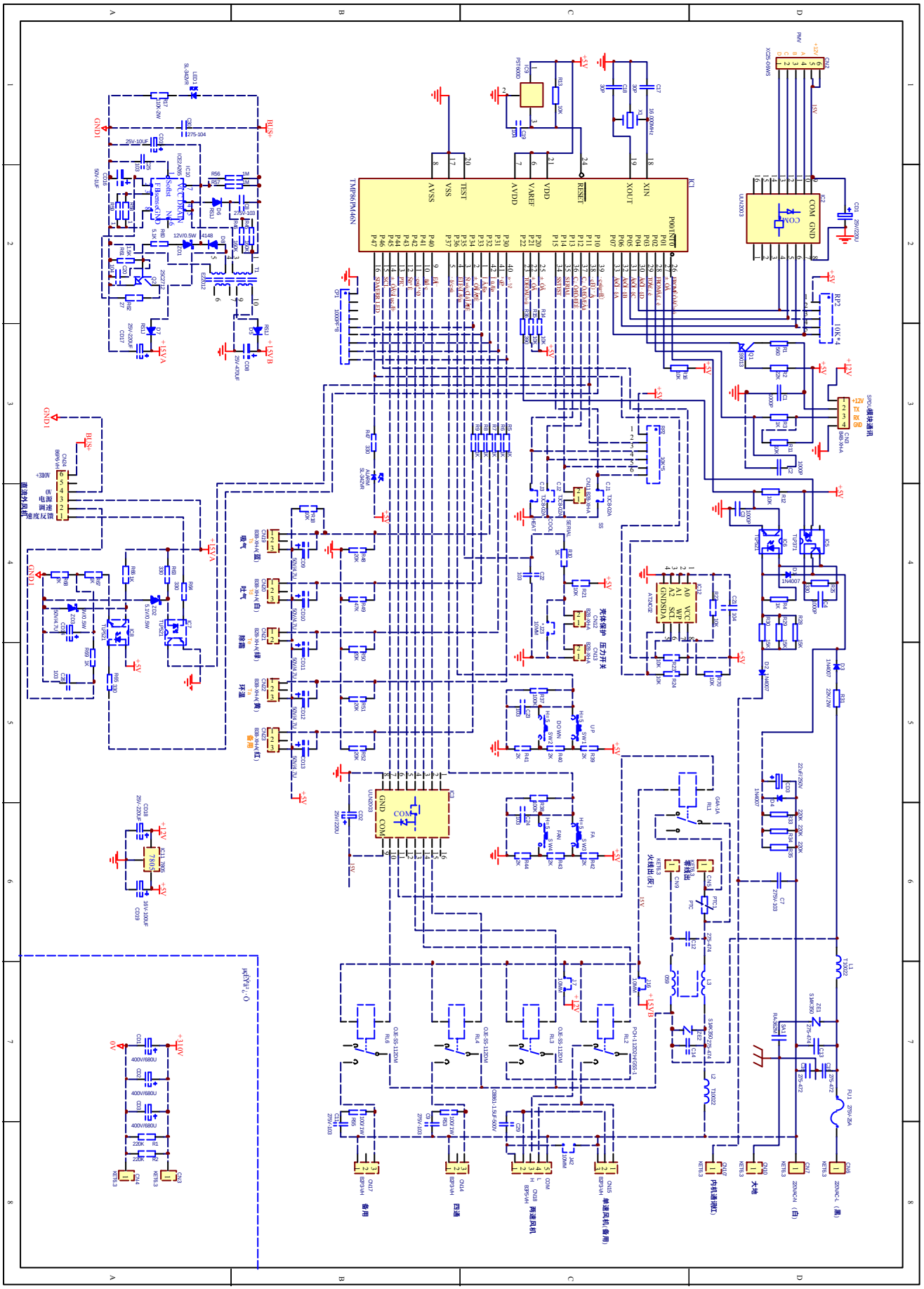
R:Red	B:Black
W:White	BL:Blue
Y:Yellow	BR:Brown
Y/G:Yellow/Green	

Wiring diagram of outdoor unit



CIRCUIT DIAGRAM





ABNORMITY DIAGNOSIS

Fault codes	HSU-18H03/R2(DB) Fault display code						Faulty Points
	Power	Timing	Running	Indoor	Outdoor	Resumable	
Faulty indoor thermistor	Blinking	Off	Off	*		*	Sensor in short or broken current
Faulty indoor thermistor	Blinking	On	On	*		*	Sensor in short or broken current
Faulty EEPROM	Blinking	On	Blinking	*	*		Wrong data or no EEPROM
Defrosting temperature sensor in short or broken current	On	On	Blinking				Poor contact of components or poor control board
Compressor discharge temperature sensor in short or broken current	Blinking	On	Off				Poor contact of components or poor control board
Thermistor on wiring board in short current	On	Blinking	On				Poor contact of components or poor control board
Poor communication	Off	Off	Blinking				1, Strong interruption 2, Poor wiring or control board
Overheating discharge pipe	Off	Blinking	Off				1,Short or excessive gas 2, High （above 242v）or low (below 187v) voltage 3,Jammed capillary tube (compressor running fast with low current input) 4,Faulty thermistor or control board 5, High ambient temperature
High AC current	Blinking	Blinking	Off				1, Excessive gas 2, Low voltage 3,Poor CT or control board 4, Faulty compressor, high running current
High DC current	Blinking	Blinking	On				1, Jammed compressor 2, Damaged power module 3, High voltage (above 242v) or low voltage (below 187v)
Broken CT wire	Blinking	Off	Blinking				1, Damaged control board 2, Short gas 3, Poor 4-way valve switch
Low voltage	Off	Blinking	On				1, Low voltage input 2, Damaged control board
Overload or high restrictions	Blinking	Blinking	Blinking				1, Jammed compressor 2, Damaged power module 3, Irregular heat emitting gum 4, High voltage (above 242v) or low voltage (below 187v)
Indoor motor warning (BP AC, DP OF K SERIES)	The indoor motor finds no motor signal in a 10-sencond period after increasing the voltage. Running for 30 senconds after cutting off the output voltage for the indoor motor, AC gives no motor signal but warning under new voltage for the motor. Both he power light and running light blink twice at 1 Hz/s and then the power light, timing light and running light blink once. The sames cycle goes on.						

TROUBLE SHOOTING

Trouble Shooting

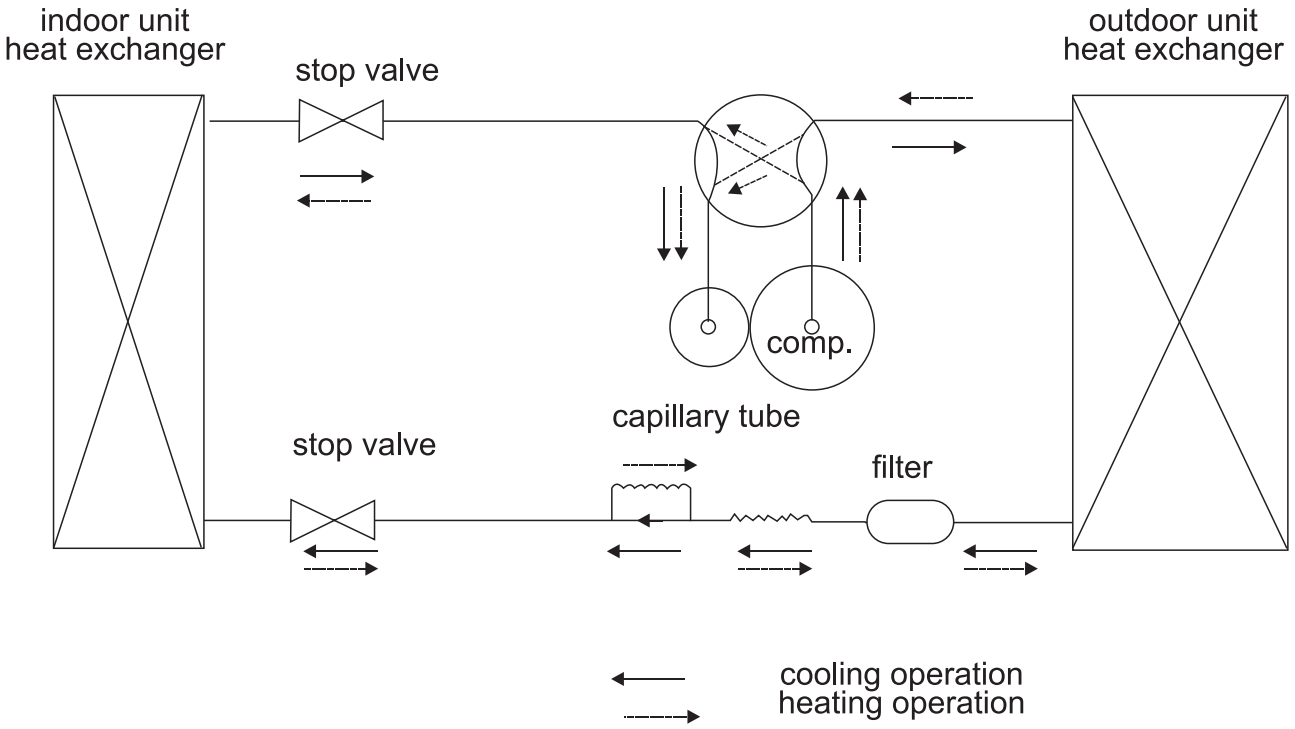
Before asking for service, check the following first.

	Phenomenon	Cause or check points
Normal Performance inspection	The system does not restart immediately.	• When unit is stopped, it won't restart immediately until 3 minutes have elasped to protect the system. • When the electric plug is pulled out and reinserted, the protection circuit will work for 3 minutes to protect the air conditioner.
	Noise is heard.	• During unit operation or at stop, a swishing or gurgling noise may be heard. At first 2-3 minutes after unit start, this noise is more noticeable. (This noise is generated by refrigerant flowing in the system.) • During unit operation, a cracking noise may be heard. This noise is generated by the casing expanding or shrinking because of temperature changes. • Should there be a big noise from air flow in unit operation, air filter may be too dirty.
	Smells are generated.	• This is because the system circulates smells from the interior air such as the smell of furniture, cigarettes.
	Mist or steam are blown out.	• During COOL or DRY operation, indoor unit may blow out mist. This is due to the sudden cooling of indoor air.
Multiple check	Does not work at all.	• Is power plug inserted? • Is there a power failure? • Is fuse blown out?
	Poor cooling	• Is the air filter dirty? Normally it should be cleaned every 15 days. • Are there any obstacles before intel and outlet? • Is temperature set correctly? • Are there some doors or windows left open? • Is there any direct sunlight through the window during the cooling operation?(Use curtain) • Are there too much heat sources or too many people in the room during cooling operation?

Application temp. range of air conditioner -7℃~43℃.

REFRIGERATING CYCLE DIAGRAM

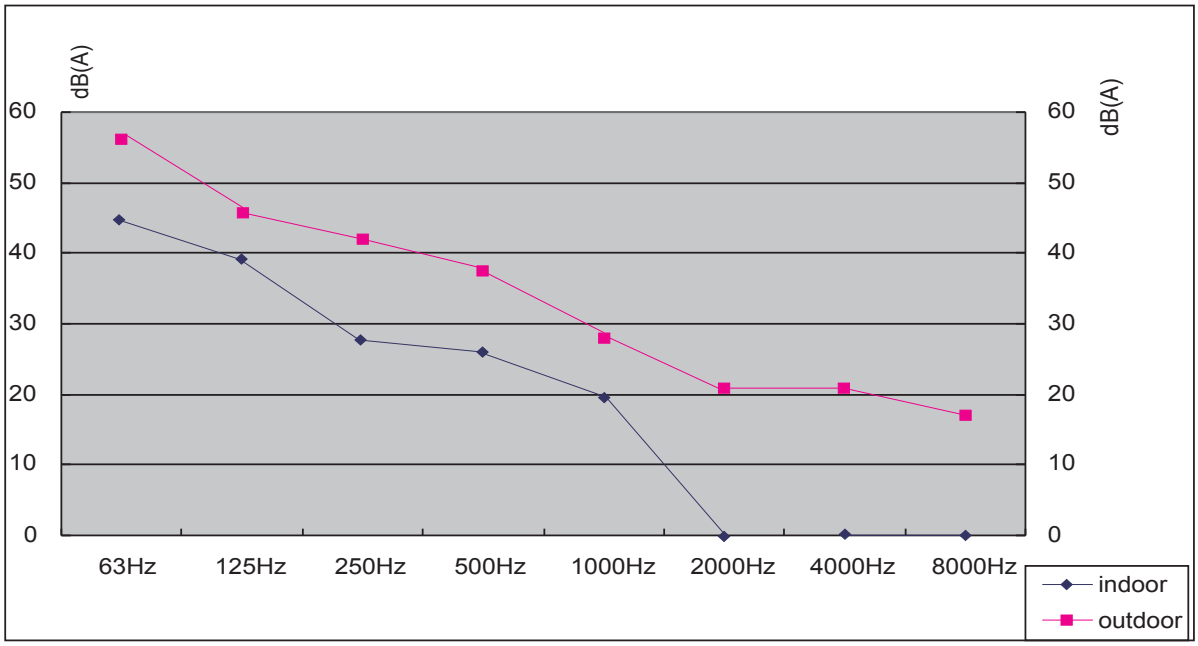
Refrigerating cycle diagram



Noise level test chart and air velocity distribution

Noise level test chart and air velocity distribution

Noise level test chart



Noise level test chart and air velocity distribution

Air velocity distribution

Air velocity distribution

Fig 1
top view
flow control panel horizal
lourer:center

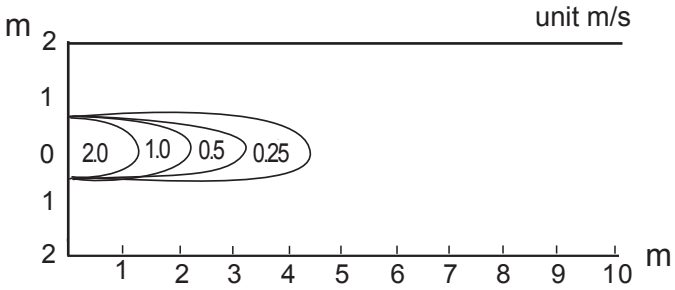


Fig 2
top view
flow control panel horizal
lourer:right and left

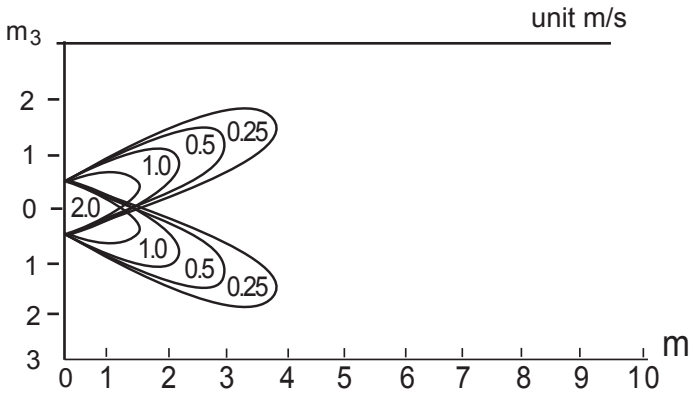


Fig 3
top view
flow control panel horizal
lourer:center

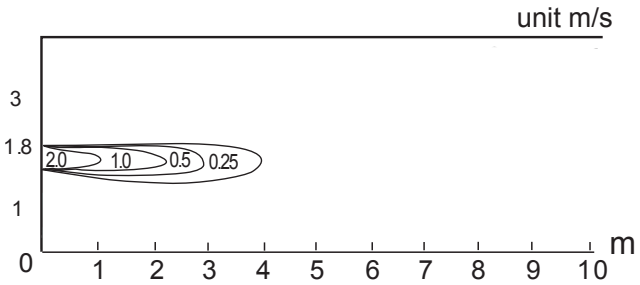
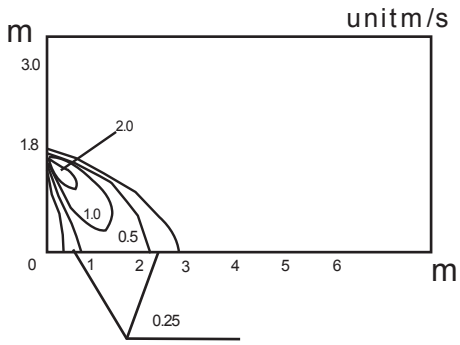


Fig 4
top view
flow control panel vertical
lourer:center



Condition
Fan speed:high
Operation mode:fan
Voltage:230V,50Hz

Installation manual

Installation Manual of Room Air Conditioner

- Read this manual before installation
- Explain sufficiently the operating means to the user according to this manual.

Necessary Tools for Installation

1.Driver
2.Hacksaw
3.Hole core drill
4.Spanner(17,19 and 26mm)
5.Torque wrench(17mm,22mm,26mm)
6.Pipe cutter
7.Flaring tool
8.Knife
9.Nipper
10.Gas leakage detector or soap-and-water solution
11.Measuring tape
12.Reamer

Drawing for the installation of indoor and outdoor units

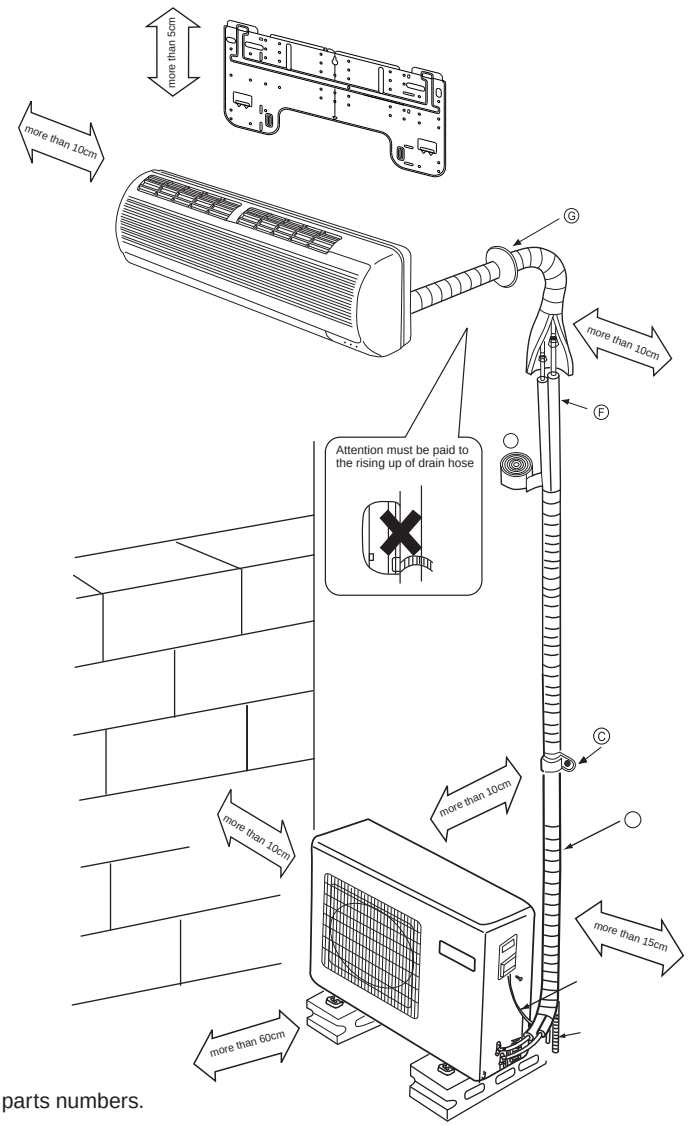
Accessory parts

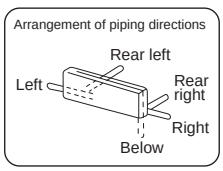
No.	Accessory parts	Number of articles
①	Remote controller	1
②	R-03 dry battery	2
③	Mounting plate	1
④	Drain hose	1
⑤	ϕ4X50 Steel nail, cement	6
⑥	ϕ4X25 Screw, Plastic cap	4
⑦	Drain-elbow	1
⑧	Cover	1
⑨	Cushion	4
⑩	Pipe supporting plate	1
⑪	Connecting cable	1

Optional parts for piping

Mark	Parts name
Ⓐ	Non-adhesive tape
Ⓑ	Adhesive tape
Ⓒ	Saddle(L.S) with screws
Ⓓ	Connecting electric cable for indoor and outdoor
Ⓔ	Drain hose
Ⓕ	Heating insulating material
Ⓖ	Piping hole cover

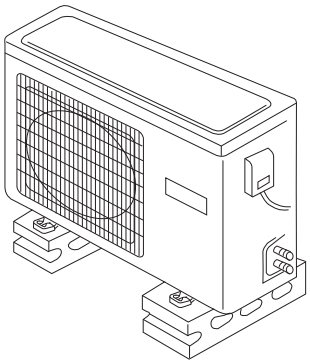
The models adopt HFC free refrigerant R410A

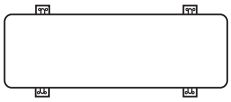




※ The marks from Ⓐ to Ⓖ in the figure are the parts numbers.
※ The distance between the indoor unit and the floor should be more than 2m.

No.





Floor fixing dimensions of the outdoor unit (Unit:mm)

HSU-22H03/R2(DB)

Fixing of outdoor unit

- Fix the unit to concrete or block with bolts(ϕ10mm) and nuts firmly and horizontally.
- When fitting the unit to wall surface, roof or rooftop, fix a supporter surely with nails or wires in consideration of earthquake and strong wind.
- If vibration may affect the house, fix the unit by attaching a vibration-proof mat.

Selection of Installation Place

Indoor Unit

- Place, robust not causing vibration, where the body can be supported sufficiently.
- Place, not affected by heat or steam generated in the vicinity, where inlet and outlet of the unit are not disturbed.
- Place, possible to drain easily, where piping can be connected with the outdoor unit.
- Place, where cold air can be spread in a room entirely.
- Place, nearby a power receptacle, with enough space around. (Refer to drawings).
- Place where the distance of more than lm from televisions, radios, wireless apparatuses and fluorescent lamps can be left.
- In the case of fixing the remote controller on a wall, place where the indoor unit can receive signals when the fluorescent lamps in the room are lightened.

Outdoor Unit

- Place, which is less affected by rain or direct sunlight and is sufficiently ventilated.
- Place, possible to bear the unit, where vibration and noise are not increased.
- Place, where discharged wind and noise do not cause a nuisance to the neighbors.
- Place, where a distance marked ⇔is available as illustrated in the above figure.

Power Source

- Before inserting power plug into receptacle, check the voltage without fail. The power source is the same as the corresponding name plate.
- Install an exclusive branch circuit of the power.
- A receptacle shall be set up in a distance where the power cable can be reached. Do not extend the cable by cutting it.

Selection of pipe

- To this unit, both liquid and gas pipes shall be insulated as they become low temperature in operation.
- Use optional parts for piping set or pipes covered with equivalent insulation material.
- The thickness of the pipe must be 0.8mm at least.

	For 18	For 22
Liquid pipe (ϕ)	6.35mm(1/4")	6.35mm(1/4")
Gas pipe (ϕ)	12.7mm(1/2")	12.7mm(1/2")

Indoor unit

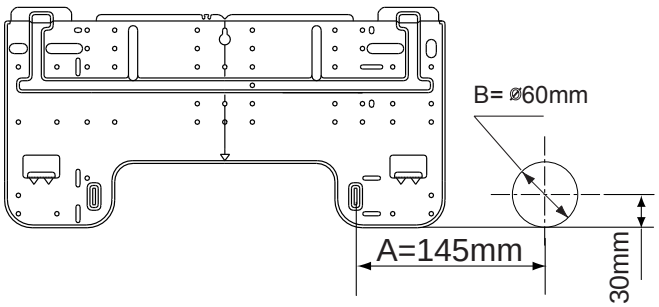
1.Fitting of the Mounting Plate and Positioning of the wall Hole

When the mounting plate is first fixed

1.Carry out, based on the neighboring pillars or lintels, a proper leveling for the plate to be fixed against the wall, then temporarily fasten the plate with one steel nail.

2. Make sure once more the proper level of the plate, by hanging a thread with a weight from the central top of the plate, then fasten securely the plate with the attachment steel nail.

3. Find the wall hole location A using a measuring tape

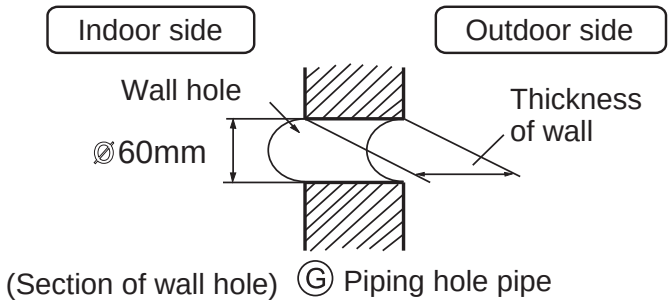


When the mounting plate is fixed side bar and lintel

- Fix to side bar and lintel a mounting bar, Which is separately sold, and then fasten the plate to the fixed mounting bar.
- Refer to the previous article, " When the mounting plate is first fixed ", for the position of wall hole.

2.Making a Hole on the Wall and Fitting the Piping Hole Cover

- Make a hole of 60 mm in diameter, slightly descending to outside the wall.
- Install piping hole cover and seal it off with putty after installation



(Section of wall hole) Ⓖ Piping hole pipe

Indoor unit

3.Installation of the Indoor Unit

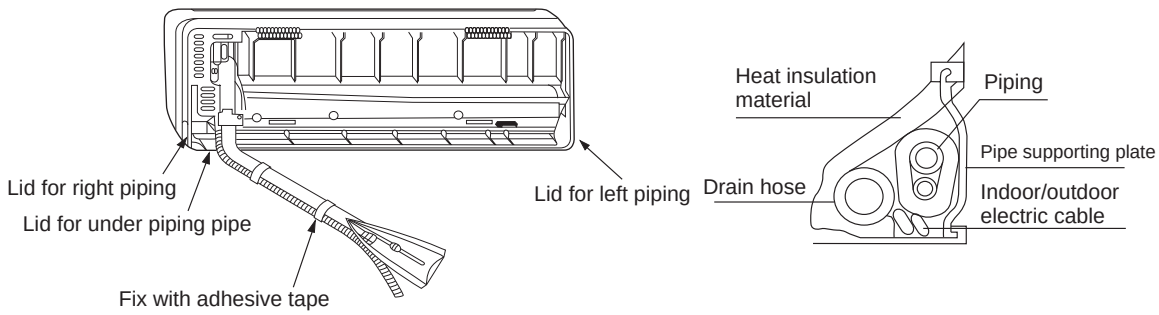
Drawing of pipe

[Rear piping]

- Draw pipes and the drain hose, then fasten them with the adhesive tape

[Left • Left-rear piping]

- In case of left side piping, cut away, with a nipper, the lid for left piping.
- In case of left-rear piping, bend the pipes according to the piping direction to the mark of hole for left-rear piping which is marked on heat insulation materials.
  1. Insert the drain hose into the dent of heat insulation materials of indoor unit.
  2. Insert the indoor/outdoor electric cable from backside of indoor unit, and pull it out on the front side, then connect them.
  3. Coat the flaring seal face with refrigerant oil and connect pipes.
     Cover the connection part with heat insulation materials closely, and make sure fixing with adhesive tape



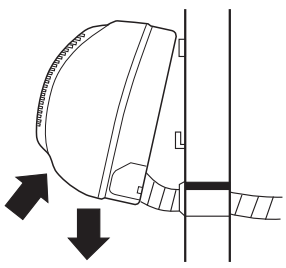
- Indoor/outdoor electric cable and drain hose must be bound with refrigerant piping by protecting tape.

[Other direction piping]

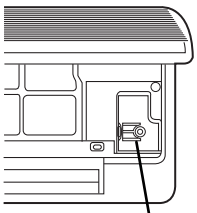
- Cut away, with a nipper, the lid for piping according to the piping direction and then bend the pipe according to the position of wall hole. When bending, be careful not to crash pipes.
- Connect beforehand the indoor/outdoor electric cable, and then pull out the connected to the heat insulation of connecting part specially.

Fixing the indoor unit body

- Hang surely the unit body onto the upper notches of the mounting plate. Move the body from side to side to verify its secure fixing.
- In order to fix the body onto the mounting plate,hold up the body aslant from the underside and then put it down perpendicularly.

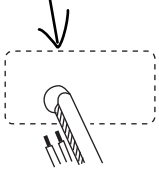


4.Connecting the indoor/outdoor Electric Cable



Removing the wiring cover

- Remove terminal cover at right bottom corner of indoor unit, then take off wiring cover by removing its screws.



When connecting the cable after installing the indoor unit

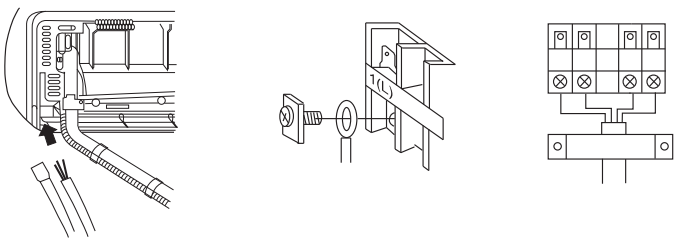
1. Insert from outside the room cable into left side of the wall hole, in which the pipe has already existed.
2. Pull out the cable on the front side, and connect the cable making a loop.

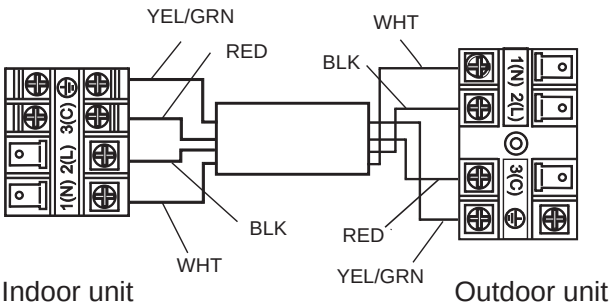
When connecting the cable before installing the indoor unit

- Insert the cable from the back side of the unit, then pull it out on the front side.
- Loosen the screws and insert the cable ends fully into terminal block, then tighten the screws.
- Pull the cable slightly to make sure the cables have been properly inserted and tightened.
- After the cable connection, never fail to fasten the connected cable with the wiring cover.

Note: When connecting the cable, confirm the terminal number of indoor and outdoor units carefully. If wiring is not correct, proper operation can not be carried out and will cause defect.

1. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similar qualified person. The type of connecting wire is H05RN-F or H07RN-F.
2. If the fuse on PC board is broken please change it with the type of T. 3.15A/250V.
3. The wiring method should be in line with the local wiring standard.
4. After installation, the power plug should be easily reached.





HSU-22H03/R2(DB)

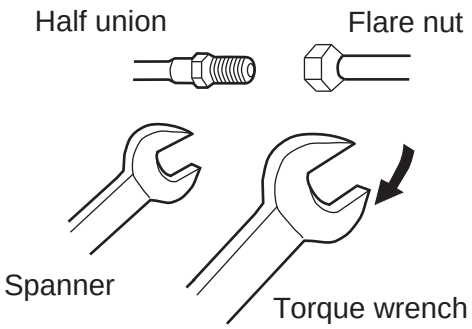
Outdoor unit

1.Installation of Outdoor Unit

Install according to Drawing for the installation of indoor and outdoor units

2.Connection of pipes

- To bend a pipe, give the roundness as large as possible not to crush the pipe ,and the bending radius should be 30 to 40 mm or longer.
- Connecting the pipe of gas side first makes working easier.
- The connection pipe is specialized for R410A.
- The max vertical distance between the indoor unit and the outdoor unit is 5 m.



Forced fastening without careful centering may damage the threads and cause a leakage of gas.

Pipe Diameter (ϕ)	Fastening torque
Liquid side 6.35mm(1/4")	18N.m
Gas side 9.52mm(3/8")	42N.m
Gas side 12.7mm(1/2")	55N.m

Be careful that matters, such as wastes of sands, etc. shall not enter the pipe.
The standard pipe length is 5m. If it is over 5m, the function of the unit will be affected. If the pipe has to be lengthened, the refrigerant should be charged, according to 20 g/m. But the charge of refrigerant must be conducted by professional air conditioner engineer. Before adding additional refrigerant, perform air purging from the refrigerant pipes and indoor unit using a vacuum pump,then charge additional refrigerant.

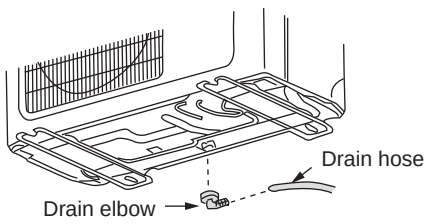
3.Connection

- Use the same method on indoor unit. Loosen the screws on terminal block and insert the plugs fully into terminal block, then tighten the screws.
- Insert the cable according to terminal number in the same manner as the indoor unit.
- If wiring is not correct, proper operation can not be carried out and controller may be damaged.
- Fix the cable with a clamp.

4.Attaching Drain-Elbow

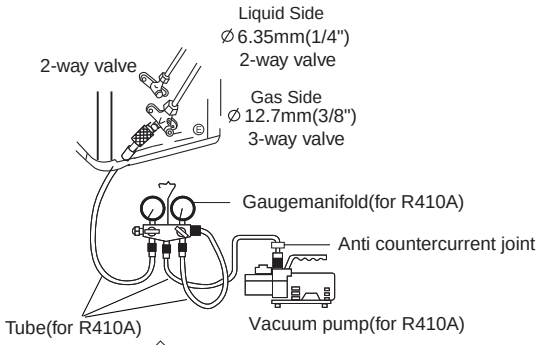
- If the drain-elbow is used, please attach it as figure.

Note: Only for heat pump unit.

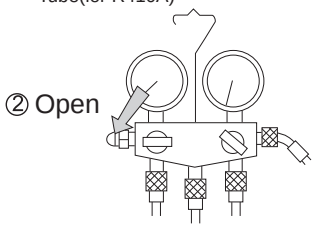


5.Purging Method:To use vacuum pump

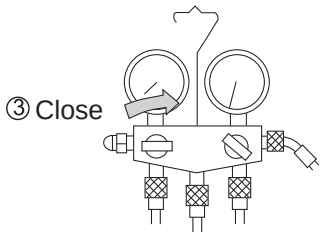
① Detach the service port's cap of 3-way valve, the valve rod's cap for 2-way valve and 3-way's, connect the service port into the projection of charge hose (low) for gaugemanifold. Then connect the projection of charge hose (center) for gaugemanifold into vacuum pump.



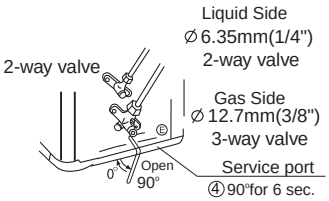
② Open the handle at low in gaugemanifold, operate vacuum pump. If the scale-moves of gause (low) reach vacuum condition in a moment, check ① again.



③ Vacuumize for over 15min. And check the level gauge which should read -0.1 MPa (-76 cm Hg) at low pressure side. After the completion of vacuumizing, close the handle 'Lo' in gaugemanifold and stop the operation of the vacuum pump.
Check the condition of the scale and hold it for 1-2min. If the scale-moves back in spite of tightening, make flaring work again, the return to the beginning of ③..



④ Open the valve rod for the 2-way valve to an angle of anticlockwise 90 degrees.
After 6 seconds, close the 2-way valve and make the inspection of gas leakage.



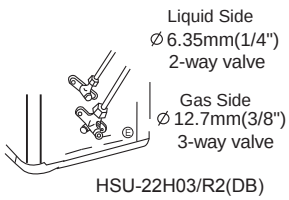
⑤ No gas leakage?

In case of gas leakage, tighten parts of pipe connection. If leakage stops, then proceed ⑥ steps.

If it does not stop gas leakage, discharge whole refrigerants from the service port. After flaring work again and vacuumize, fill up prescribed refrigerant from the gas cylinder

⑥ Detach the charge hose from the service port, open 2-way valve and 3-way. Turn the valve rod anticlockwise until hitting lightly.

⑦ To prevent the gas leakage, turn the service port's cap, the valve rod's cap for 2-way valve and 3-way's a little more than the point where the torque increases suddenly.



⑧ After attaching the each caps, check the gas leakage around the caps.

CAUTION:

1.If the refrigerant of the air conditioner leaks, it is necessary to discharge all the refrigerant. Vacuumize first, then charge the liquid refrigerant into air conditioner according to the amount marked on the name plate.

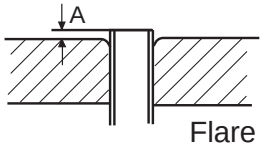
2.Please do not let other cooling medium, except specified one (R410A), or air enter into the cooling circulation system. Otherwise, there will be abnormal high pressure in the system to make it crack and lead to personal injuries.

1.Power Source Installation

- The power source must be exclusively used for air conditioner. (Over I0A)
- In the case of installing an air conditioner in a moist place, please install an earth leakage breaker.
- For installation in other places, use a circuit breaker as far as possible.

2.Cutting and Flaring Work of Piping

- Pipe cutting is carried out with a pipe cutter and burs must be removed.
- After inserting the flare nut, flaring work is carried out.



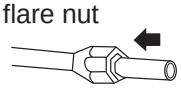
Flare tooling die

	Flare tool for R410A	Conventional flare tool	
	Clutch-type	clutch-type(Rigid-type)	Wing-nut type (Imperial-type)
A	0~0.5mm	1.0~1.5mm	1.5~2.0mm

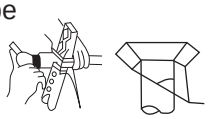
1.Cut pipe

2.Remove burs

3.Insert the flare nut



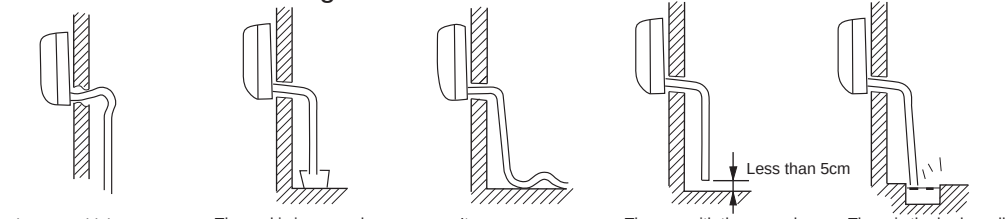
4.Flare pipe



Correct	Incorrect				
	Lean	Damage of flare	Crack	Partial	Too outside

3.On Drainage

Please install the drain hose so as to be downward slope without fail.
Please don't do the drainage as shown below.



It becomes high midway. | The end is immersed in water. | It waves. | The gap with the ground is too small | There is the bad smell from a ditch

- Please pour water in the drain pan of the indoor unit, and confirm that drainage is carried out surely to outdoor.
- In case that the attached drain hose is in a room, please apply heat insulation to it without fail.

Check for Installation and Test Run

- Please kindly explain to our customers how to operate through the instruction manual.

Check Items for Test Run

☐ Put check mark ✓ in boxes

☐ Gas leak from pipe connecting?
☐ Heat insulation of pipe connecting?
☐ Are the connecting wirings of indoor and outdoor firmly inserted to the terminal block?
☐ Is the connecting wiring of indoor and outdoor firmly fixed?
☐ Is drainage securely carried out?
☐ Is the earth line securely connected?
☐ Is the indoor unit securely fixed?
☐ Is power source voltage abided by the code?
☐ Is there any noise?
☐ Is the lamp normally lighting?
☐ Are cooling and heating (when in heat pump) performed normally?
☐ Is the operation of room temperature regulator normal?

Sincere Forever

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